FEB 10 1930

February, 1930
Vol. XLII, No. 2
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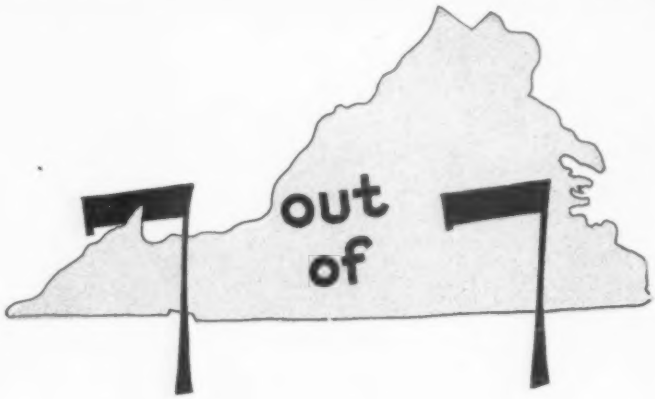
The American City

The Core, an Open Space Extending for Three Blocks Through the Heart of the Business Section of Hamilton, Ontario



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A type of pavement which has been constructed in *all* the largest cities of a State (those cities having a population of more than 25,000), must have those qualities which make for durability and economy.

In the State of Virginia, there are seven cities having a population exceeding 25,000. These cities are Lynchburg, Newport News, Norfolk, Petersburg, Portsmouth, Richmond and Roanoke. In all seven, there are resilient water-proof pavements of TEXACO Asphalt. In addition to this State's most important cities, many smaller municipalities are served by streets paved with TEXACO.

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Washington Street, Petersburg, Va., one of this city's TEXACO Asphalt pavements

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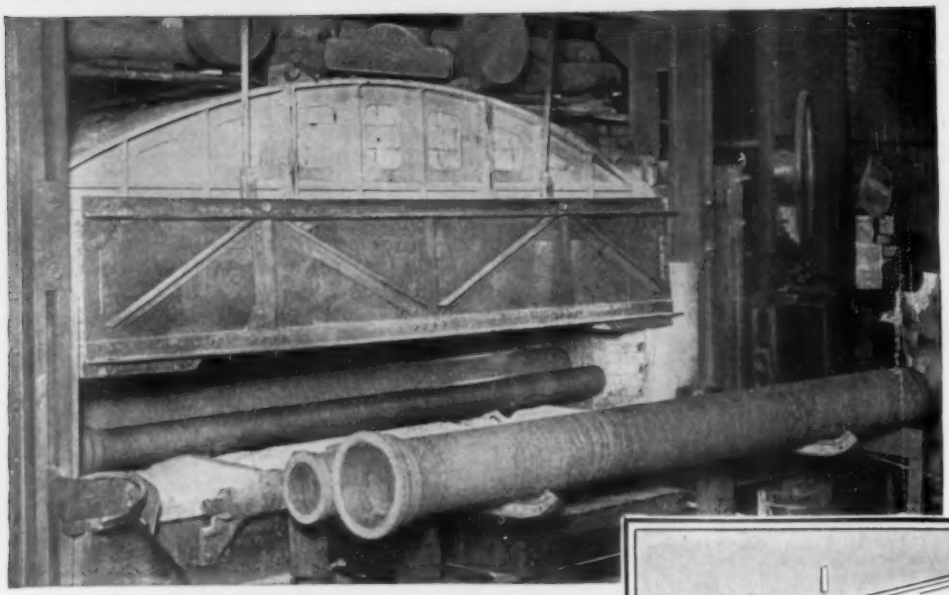
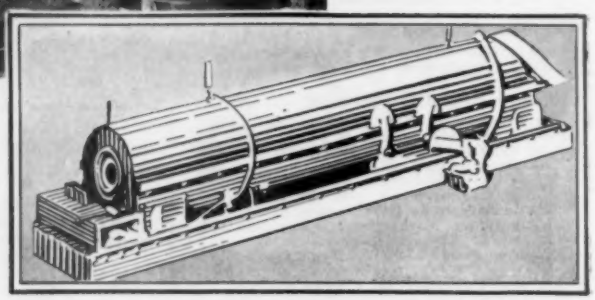
In THE MUNICIPAL INDEX (an 800-page annual volume) readers will find much material, including articles, lists and bibliographies on a wide variety of municipal and civic subjects, not published in the monthly issues of THE AMERICAN CITY.



The large photograph shows the deLavaud annealing furnace where controlled temperatures uniformly anneal every length of deLavaud pipe.

Below is the famous deLavaud machine which produces the strongest cast iron pipe known.



Controlled annealing gives deLavaud pipe uniform strength and flexibility

THE controlled annealing in the manufacture of deLavaud pipe may be regarded as one of the greatest advances in the cast iron pipe industry. All cast iron pipe must be annealed at some stage of its manufacture. For annealing, as every engineer knows, reduces brittleness and tends to eliminate casting strains.

But only in the manufacture of deLavaud pipe is the annealing process accurately controlled. Every length of deLavaud pipe is heated in an oven to a temperature of 1750 degrees and *uniformly* annealed from bell to spigot. The result is the uniform flexibility of deLavaud pipe and absence of all casting strains.

The superior strength of deLavaud pipe is another reason for its wide acceptance. deLavaud pipe is made by pouring molten iron into a rapidly revolving metal mold. This mold is water jacketed. When the molten iron comes in contact with the chilled surface of the mold, a physical change takes place in the structure of the iron; all the coarse particles become finely and evenly divided. At the same time centrifugal force—a force 40 times greater than gravity—drives out impurities at the center.

The fine grain structure of deLavaud pipe metal together with its remarkable freedom from impurities enable deLavaud pipe to show an average tensile strength of more than 30,000 lbs. per square inch.

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Our pipe bears the "Q-Check" trademark of The Cast Iron Pipe Research Association

"HINTSAND POINTERS" PAGE for MAYORS AND CITY MANAGERS

The Worst Year Yet in Deaths from Automobile Accidents

THIRTY-ONE thousand five hundred motor-vehicle deaths in the United States during 1929, is the estimate of the National Safety Council. This is 13 per cent worse than the 1928 record, although motor-vehicle registration increased only 8 per cent during the year. This increase corresponds closely to figures just reported by the Metropolitan Life Insurance Co., covering automobile accident deaths of its Industrial Department weekly premium policyholders for the last two years. The insurance company's total for this group for the calendar year 1929 is 4,127, as compared with 3,619 in 1928. The comparisons on a basis of policyholders exposed to risk are 21.8 motor-vehicle deaths per 100,000 policyholders in 1929, and 19.7 in 1928. The insurance company's figures as to per cent of total deaths according to circumstance of accident for the two years, are:

	1929	1928
Collision with railroad train	3.6	4.5
Collision with street car	1.2	1.5
Collision with other vehicle	15.0	10.5
Collision with pedestrian	49.1	51.3
Collision with stationary or fixed object	5.2	3.8
Non-collision accidents	14.3	12.9
Type of accident not specified	11.6	15.5
All automobile accidents	100.0	100.0

Students of the growing problem of traffic tragedies in American cities find one note of encouragement. The cities and states taking the greatest interest in careful records and in progressive safety measures are showing, as a rule, a reduction in mortality rates or a lesser rate of increase than other cities and states.

Beginning on page 91 of this issue will be found an honor roll of 13 cities, and statements from some of them as to methods used in their war against the slaughter of their citizens on the public highways.

An Extraordinary Utility Decision of the United States Supreme Court

WHAT is in various ways the most extraordinary and far-reaching public-utility decision yet reached has come from the United States Supreme Court in a case involving the Baltimore Street Railway. The Court not only applies to the matter of annual depreciation charges the reproduction-cost standard to which it has pretty thoroughly committed itself as to valuation in a number of recent cases, but goes further by declaring the street railway entitled to a rate of fare that will yield it more than 7 per cent on its reproduction value in addition to enabling it to put aside a surplus. The result is a ten-cent fare for Baltimore. It will repay you to read the analysis of this unusual opinion on pages 103-104 of this issue.

Fact-Finding—Important to Presidents, and Mayors, Too

PRESIDENT HOOVER, perhaps because of his long experience in engineering and mammoth public undertakings, has a sturdy respect for fact-finding. There may be some disposition to make light of fact-finding, and it is doubtless true that there have been times and places where it has been used to delay rather than further accomplishment. But it would be hard to challenge the sober wisdom of his recent declaration that:

"The truth is hard to discover; it must be distilled through the common judgment of skilled men and women from accurately and patiently collected facts."

An Economical Method of Learning Citizens' Wishes

EVERY city administration wants to know what its citizenry think of it. The simplest way to remove all doubt is to ask them. City Manager Sherrill, of Cincinnati, recently cut his Gordian knot by enclosing a post card with each water bill. The card read:

To Each Citizen of the City of Cincinnati:

Have you any suggestions to offer as to how we may better any part of the Public Service necessary to you as a member of the community?

If so, use the space below and mail or leave your suggestions at Room 150, City Hall.

Five lines were left for the suggestions and the citizen's name and address. Several thousand of these were returned, the majority of which Manager Sherrill found exceedingly helpful. Every valid criticism was promptly acknowledged.

Support for the City Administration from the Sidelines

CITY MANAGER H. G. OTIS of Beloit, Wis., has some ideas about the use of boards in connection with the city administration which may not be orthodox, but which seem to this writer very sound. When he assumed his duties as first Manager of that city, he found two dozen boards and committees with fragments of power and responsibility. He has converted all of these into advisory bodies, persuading the old members to remain. The Manager and a member of the Council are ex-officio members of each, but have no votes. He is aiming at a "fusing of the elements of efficiency and democracy into a workable amalgam from which may be wrought a finer type of community progress." The philosophy behind this, as he outlined it at the Fort Worth Convention of the International City Managers' Association, is something like this:

"The best of teams needs wholehearted support from the sidelines. Many a touchdown should be credited to the rooters. Let's try opening the gates and filling the bleachers. Those who like to toot their own horn should be invited to join the band. Why not make the man who yells loudest, cheerleader?

"My small daughter is permitted to use the cookie-cutter and says, 'These cookies *I made* taste the best.'

"Beloit is passing the cookie-cutter around and waiting to see how the cookies will taste."

A Fine Example of Codification

THE city of Cedar Rapids, Iowa, has just completed the codification of its ordinances. The new Municipal Code (listed on page 195 of this issue) is one of the best things of its kind that have come to our attention. The material is arranged in 94 chapters grouped in 16 titles. The latter include such headings as City Council and Commissions, Executive Officials, Police Court and Misdemeanors, Police Department, Fire Department, Parks and Public Property, Public Health, Streets and Public Improvements, to mention but a few. The volume is both thorough and simple. It is prefaced with an historical sketch and a brief survey of the municipality's activities. Cedar Rapids has given us an example that might well be imitated in other places. Codification is one of the first steps toward good municipal housekeeping.

What Mayor Has Served His City Longest?

THE political life expectancy of American mayors is not, as everyone knows, very great. But there are exceptions. Mayor Samuel A. Carlson, after a two-year interval of retirement from public office, celebrated the New Year by entering on his third decade as chief executive of Jamestown, N. Y. Not only had he been Mayor for twenty years, but his previous service as Councilman gave him a continuous public career of thirty-nine years. Can any other municipal executive beat this record?

Cleveland's Manager Expelled by the Machine

AFTER six years of noteworthy administration of Cleveland's city government, Manager William R. Hopkins was unceremoniously booted out of office by the political machine in his city on January 22.* Cleveland is the largest city to have adopted the manager plan. Four times the opponents of the plan have sought to persuade the electorate to repudiate or weaken it at the polls, but on each occasion these efforts have failed. It will be instructive to watch the outcome of the present flank attack.

* The story of the Hopkins ouster will be found on page 158.

Left: 1,000,000-gallon tank which takes care of peaks in a district of Springfield, Ill., some distance from the pumping station.

Right: Horton tank of 1,000,000-gallon capacity serving the suburban community of Kenmore, N. Y.

IMPROVED WATER SERVICE

Above: 1,000,000-gallon tank which with several other tanks allows the Kitchener, Ont. water system to operate at a uniform rate.

with the same pumping capacities

Your city may be able to enjoy greatly improved water service without increasing your investment in operating equipment. Many cities have found that such an improvement is possible, by simply adding Horton elevated steel storage tanks.

Perhaps you have inadequate storage, or none at all. Numerous engineering studies confirm the experience of representatitve cities that elevated storage strategically located, is frequently the most economical way to correct faults in the service. The provision of ample capacity in elevated tanks means more uniform pressures . . . reduced first and operating costs . . . repairs can be made to transmission mains without interrupting service. Increased pumping capacity is unnecessary because you can pump water to storage in offpeak periods for use when demand is at a maximum. Your equipment and mains work 24 hours a day instead of 12 to 18.

We will be glad to refer you to cities using large Horton storage tanks and help you analyze your own storage.

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Chicago.....2127 Old Colony Bldg.	Detroit.....1501 Lafayette Bldg.	Dallas.....3306 Magnolia Bldg.
New York.....3108 Hudson Terminal	Philadelphia.....1616 Jefferson Bldg.	Atlanta.....1014 Healey Bldg.
Cleveland.....2236 Union Trust Bldg.	Boston.....1501 Consolidated Gas Bldg.	San Francisco.....1033 Rialto Bldg.

HORTON TANKS

Do you mention THE AMERICAN CITY? Please do.

ITEMS and ABSTRACTS on WATER AND SEWERAGE

The Control of Odors at Sewage Screening Installations

SCREENING, or the straining of more or less suspended material from the sewage flow, results in the capturing of a material that present a vexing problem for the odor-control proponent. The screen house, more than any other spot in the sewage treatment plant, requires untiring care in operation and scrupulous cleanliness if odors are to be prevented. The trend toward mechanical screening equipment has done much to keep down odors and to dispose of screenings to storage hoppers or cans without muss or fuss. The screens or racks should be kept clean, the operating floors swept and well flushed, and no débris should be permitted to gather. Stored screenings can be deodorized by means of cresol compounds or chloride of lime. A small quantity of deodorant sprinkled about will do much to raise the morale of the rack or screen attendant.

Screenings can be trenched, plowed under the soil, composted or incinerated. The disposal of screenings in low spots about the plant site produces obnoxious odors and objectionable breeding grounds for flies and rats. The drying of screenings on open beds is also objectionable on account of odor production. The fact that a treatment plant is located at a safe distance from habitations should be no inducement for the operator to neglect the satisfactory sanitary disposal of this troublesome material. An odor is an odor, even if there is no nose to smell it. Perhaps, the foulest and most disgusting odors ever observed about the sewage plant have come from accumulations of trash in some handy ravine or borrow-pit. The covering of screenings with dried sludge, dirt or other absorbent materials as rapidly as spread will do much to control the odor emanating from this source.

Excellent success has been had with the disposal of bar rack captured material to the amount of about 0.75-cubic yard daily at a plant located but a few hundred feet from a well-populated city street. Winter screenings are stored and shallow-trenched in clayey ground just before all the frost leaves the accumulation in the spring. Summer screenings are transported daily to a plowing field, accumulated in small piles for a week and then thrown into a furrow and covered by plowing. No odors have ever emanated from the trenching or plowing fields. Test borings indicate that the trenched material decomposes in about four years, while the plowed material is destroyed, except for an occasional piece of rag, in one year. Chloride of lime both dry and in milk form has been used on storage piles awaiting plowing, to prevent odor and fly production during hot summer days. Attempts to interest farmers in screenings as a fertilizer has met with but little success because of the unclean appearance of the trash. Disposal of screenings to farmers is of course an ideal method of removing this odor-producing material from the plant site.

—From a paper by Morris M. Cohn, Sanitary and Testing Engineer, Department of Public Works, Schenectady, N. Y., presented before the Pennsylvania Sewage Works Association.

Valves Card-Indexed

IN Quincy, Ill., all valves in the water-mains are listed in a card index file. The card for each valve shows its location by measurements, in most instances where the streets are paved, from the street curb line. On unpaved streets, the measurements are taken from the street or property line.

Where a valve has become buried so that the box does not show on the surface, a dip needle is found quite effective in locating the valve, especially where the approximate location of the valve is indicated on the card.

W. R. GELSTON,
Superintendent, Water-Works Commission.

Rectangular Coordinates Used to Locate Valve in Rochester

ROCHESTER, N. Y., uses a system of rectangular coordinates from the curb or some other fixed visible point, the valve being at the intersection of the two coordinates. The first coordinate is taken at right angles to the curb line of the street on which the valve is located, and the other is taken in a direction at right angles to the first. An alphabetical list of the streets is prepared on which each valve is given by location and coordinates, together with the system, size and type of valve. This list is printed on loose-leaf sheets by a hand multigraph and is kept up to date by frequent corrections. The sheets are inserted in a loose-leaf binder, and a "Gate Book" is carried on each repair truck so that it is easy to locate any valve day or night, even if it is covered with snow or dirt.

A skeleton map of the city, showing the mains, hydrants and valves, is also carried on each repair truck, so that, to shut off a certain section of the city, all controlling valves in that section are easily located.

A specimen instruction sheet is made up as shown in the next column.

City of Rochester, N. Y.
East Side of City. East of Genesee River

Showing the number, size, kind and location of stop gates set in the pipe mains of the city distribution.

NOTES.—The measurements in the first column of "Coordinates" are taken at a right angle to the respective lines of the streets, curb lines or tree lines (T.L.) in which the mains containing the gates are located; those in the second column are taken in a direction at a right angle to the former, or parallel respectively to the lines of the aforesaid streets, except in cases particularly specified. All these measurements are taken in feet and tenths of a foot.

The letter in the parenthesis following a coordinate denotes the direction of sight in taking the measurements; the other letters in these columns of coordinates refer to the points of the compass and the line (L) of street, and the face (F) of some building. The letters in the columns headed "System" signify as follows:

D. denotes domestic system.
H. denotes Holly system.
S.P. denotes supply pipe system.
F.C. denotes flanged connection.
B.O. denotes blow-off.
H.B. denotes hydrant branch.
C.B. denotes cross branch between street mains.
S.C. denotes side connection between feed and street mains.
B.P. denotes by-pass gate on main gate.
G.G. denotes guard gate.

The guard gates (marked G.G.) are not to be used except in case of failure of the other gate on the same pipe or lateral connection. The letters in the column headed "Kind" signify as follows:

L. denotes Ludlow Valve Manufacturing Co. gate.
E. denotes Eddy Valve Co. gate.
W.E. denotes Water Works Equipment Co. gate.
R. denotes Rensselaer Manufacturing Co. gate.
C.C. denotes curb cock or small valve.
S. denotes Smith Manufacturing Co. gate.

All gates marked with a * in the column headed "Size" have flange at each end.
All gates marked with a † in the column headed "Size" have flange at one end and bell at the other end.
All gates not thus marked have bell at each end.
All gates of less than four inches, turn to the left to open, or in a direction opposite to the motion of the hands of a watch.

The number of turns required to open the various gates are as follows:

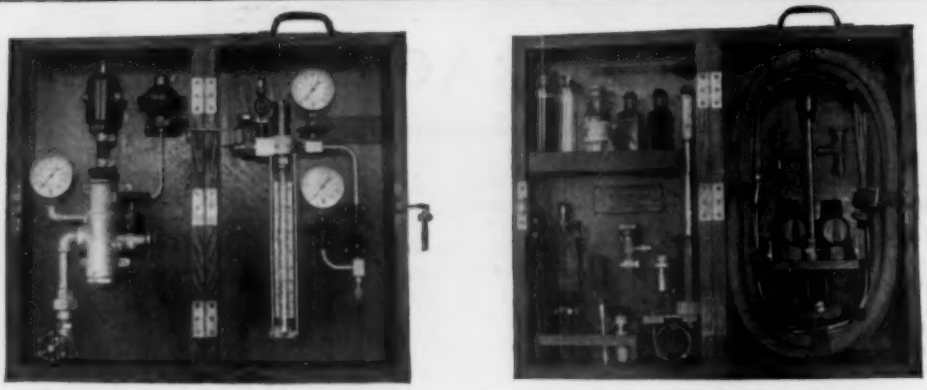
A 4-inch gate, 14 to 15 turns
A 6-inch gate, 21 to 23 turns
An 8-inch gate, 27 to 28 turns
A 10-inch gate, 33 to 35 turns
A 12-inch gate, 41 to 42 turns
A 16-inch gate, 51 to 52 turns
A 20-inch gate, 63 to 65 turns
A 24-inch gate, 79 to 81 turns
A 30-inch gate, 170 turns on pinion
A 36-inch gate, 276 turns on pinion

Surveyed and compiled by Raymond G. F. Christ.

A section of a typical sheet of valve coordinates follows:

CENTRAL AV.							
H	12	R	S.E.N.Water	6.0 N.of S.C.Central Av.		35.0 W.of E.L.N.Water	
D	16	R	S.E.N.Water	7.8 S. of S.L.Central Av.		18.5 W.of E.C.N.Water	
H	12	R	S.E.N.Water	5.5 N.of S.C.Central Av.		18.0 E. of E.L.N.Water	
D	16	R	S.E.N.Water	4.5 S. of S.C.Central Av.		11.2 E. of E.L.N.Water	
D	16	R	S.W.St.Paul	8.4 N.of S.C.Central Av.		7.5 W.of W.L.St.Paul(S)	

I. S. MATTHEWS,
Superintendent, Water Division.



W&T PORTABLE CHLORINATING EQUIPMENT FOR MAIN STERILIZATION AND EMERGENCY USES

All New Mains are Polluted and should be Chlorinated . . .

With their boots on — Mud — Filth Gross pollution — Into the main — One of the many reasons why water mains should be sterilized by chlorine

EVERY waterworks man knows how impossible it is to prevent pollution of new mains during construction, or old ones while repairs are being made. Trench filth, leakage from sewers, surface drainage—gross pollution . . . *a positive menace to the public health.* No amount of flushing will completely eliminate such pollution. The main must be STERILIZED to kill disease germs. Chlorine is the cheapest and best chemical to use.

With the W & T Portable Chlorinating Equipment, new mains can be easily and quickly sterilized and the necessary control tests made to assure complete disinfection. It is applicable for emergency uses of all kinds. Every waterworks should own one.

WRITE FOR OUR TECHNICAL BULLETIN No. 98

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EARL L. HOLLOWAY
Supt., Water Board
Flint, Mich.
(Appointed 1926)

HARRY ELLSWORTH
Supt., Water Dept.
Meadville, Pa.
(Appointed 1903)

J. ANTHONY KEILS
Supt., Water Works
Mount Clemens, Mich.
(Appointed 1913)

WHO'S WHO IN WATER SUPPLY

The 26th of a Series of Portraits of Water-Works Officials, Which Has Appeared Monthly Since January, 1928

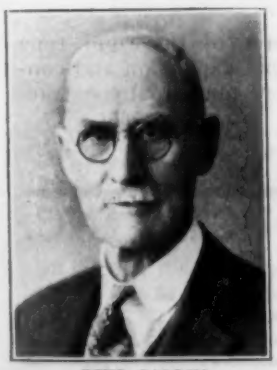
E. E. CROWELL
Secretary, Water Dept.
Highland Park, Texas
(Appointed 1923)

E. S. TYNER
Supt., Water Works
Plant City, Fla.
(Appointed 1916)

SCOTT M. LEE, JR.
Supt., Water Dept.
Arcadia, Calif.
(Apointed 1916)

WALTER E. MICK
Supt., Water Works
Tampa, Fla.
(Appointed 1928)

ARTHUR H. TILLSON
Supt., Water Dept.
Northampton, Mass.
(Appointed 1922)



PHIL CARLIN
Supt., Water Works
Sioux City, Ia.
(Appointed 1891)

JOHN M. JOHNSON
Supt., Water Works
Cuero, Texas
(Appointed 1928)

JAMES H. PHILLIPS
Supt., Water Works
Bonham, Texas
(Appointed 1923)

R. W. EVANS
Mgr., Water Works
Uvalde, Texas
(Appointed 1929)

Wanted—

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One of the greatest authorities in this country on concrete highway engineering says:

"—And I would put expansion joints every 35 feet, with some kind of expansion joint filler that would really take care of temperature and moisture variations."

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What Are Servicised Expansion Joints?

They are premoulded safety strips which protect concrete structures against the destructive results of stresses set up by natural causes.

They are produced from specially refined asphalts to which fibers are added for elasticity and reinforcement, then formed hot under pressure into the required shapes.

They do not deteriorate in stock or on the job and can be handled as easily as a board.

By protecting municipal structures of the rigid type against cracks and bursts due to rapid expansion and contraction, the money is saved for more municipal construction.

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Why not remember to mention THE AMERICAN CITY?

ITEMS and ABSTRACTS for ENGINEERING AND HIGHWAY DEPARTMENTS

Road Building Keeps Money in Circulation

IS money spent like water over the dam? Fortunately not, for the work of a dollar is never done. All too frequently money expended by governmental bodies is regarded by the taxpayer as money that is gone forever, when, as a matter of fact, the spending of money by the government gives the dollar at least a double value.

First of all, a convenience or improvement is purchased which enables the government to serve its citizens better. Secondly, money spent for improvements goes into the pockets of individuals, and, not unstrangely, labor gets more than any other factor.

In the matter of paved highway construction, for instance, labor receives more than half of the total expenditure, as is shown by an analysis of costs made by the Iowa State Highway Commission. In Iowa the construction cost of a mile of concrete pavement has averaged $26,184, of which 52 per cent, or $13,706, goes to labor through various channels.

Costs for a mile of highway are disfollowing amounts: stone aggregate, $3,441; cement, $5,856; reinforcing steel, $850; freight, $5,520; grading, $2,000; miscellaneous contractor's costs, including profits, $8,517.

From these items labor receives the following amounts: stone aggregrate, $1,032; cement, $3,116; reinforcing steel, $255; freight, $2,448; grading, $1,500; and the labor portion of miscellaneous contractor's costs, $5,355.

Money's greatest value can be achieved only by keeping it in circulation, and to do this the stimulating hand of governmental activity is needed. There is not a single community in this country that is not in need of important improvements—some communities need dozens. Planning, although essential, can be dangerous if projects are left in the paper stage too long.

Since government is the one thing which all support, it must naturally be the bulwark in times when clouds gather over the economic sky. Well-planned construction programs, which embrace only those projects that will be of actual value to the community, are now needed.

Renting a Paved Road

THIS little article figured out by the editor of the Albert Lea, Minn., *Tribune*, is one of the most interesting arguments in favor of bond issues for county and state highways that has yet been published:

"The Harris Trust and Savings Bank of Chicago offers today Black Hawk county road bonds at a price which will yield 4¼ per cent interest per annum, which is an exceptionally high rate of interest on road bonds. The tender started this editor to figuring what it costs to the people of Black Hawk county in interest to rent money enough from investors to pave a mile of road.

"The pavement cost approximately $25,000 per mile. This $25,000 is costing $1,187 per annum in interest but the bonds are to be paid aff each year after the fifth year so the actual average interest cost over a fifteen-year period will be only half of that. In other words, the people of Black Hawk county will pay $1.60 per day for fifteen years as a rental charge for the use of the money that they borrowed to pay for their paved road.

"Now from 500 to 1,500 automobiles per day use a paved road. If only 500 should use it this rental charge of $1.60 per day for the use of the money will pro rate at three-tenths of a cent per mile for the rent of a paved road.

"We all know that it costs from 5 cents per mile upwards to own and operate an automobile. Can we afford to pay rent for a paved road at the rate of three-tenths of a cent per mile? Or upon second thought, can we afford to do without a paved road on which to operate our automobiles when we can rent one for three-tenths of a cent per mile?

"Of course, if a road should carry 1,500 automobiles per day as our Lincoln Highway does then the rental cost for the money to pave a mile of road is only one-tenth of a cent per mile to each car owner. If the Lincoln Highway were a toll road with a dirt road on the next section line free, would we pay one-tenth of a cent per mile to use the paved road? Would we? Well, I guess that we would."

Minnesota Highway Department Ready for Snowstorm

THE Minnesota Highway Department has increased its mileage of snow-fence and its snow-plowing equipment this year. Fence to the amount of 490,000 feet has been bought, which makes a total of 3,547,600 feet, or 672 miles, of fence for use in protecting roads from drifts. This fence has been put up where prevailing winds are most likely to cause drifts. Snow-fence alone will not keep the roads open, however, for many snowfalls are heavy enough to stop traffic even if there is no drifting, and sometimes winds from unexpected directions pile up the drifts. Then the plows must be used.

The Department owns 200 heavy trucks with an equal number of V-type plows. Motorized equipment is now used in maintenance work, summer and winter, on about three-fourths of the state highway system. The section man is employed the year round, each man being responsible for about 25 miles of highway. The snow-plow is attached to the same truck that is used to pull graders and haul gravel in summer. Where team patrols are still used in summer, truck plows are operated from district headquarters or other convenient places.

The trucks and V-plows open the roads quickly after an ordinary snowfall, but in case of deep drifts the heavier but slower tractor plows and rotaries are used. The Department owns 5 blower type plows attached to trucks, 13 lateral type rotaries, 40 heavy tractor plows, and 53 heavy tractors. These are stationed at central points in the various districts and sent out wherever needed.

It is Minnesota's policy not to send out plows during a severe storm. To do so makes ridges which cause deeper drifts. The rule is to wait until the storm abates; then the men are rested and ready to go and the equipment is in good shape for the battle and, with the exception of very deep drifts, it is usually only a matter of a few hours before the roads are opened. Even then, shifting winds quickly block the roads.

A bulletin issued to motorists urges them to be prepared for emergencies and carry a shovel, chains and extra clothing. Night driving should be avoided unless there is definite information that roads are open and travelers are prepared.

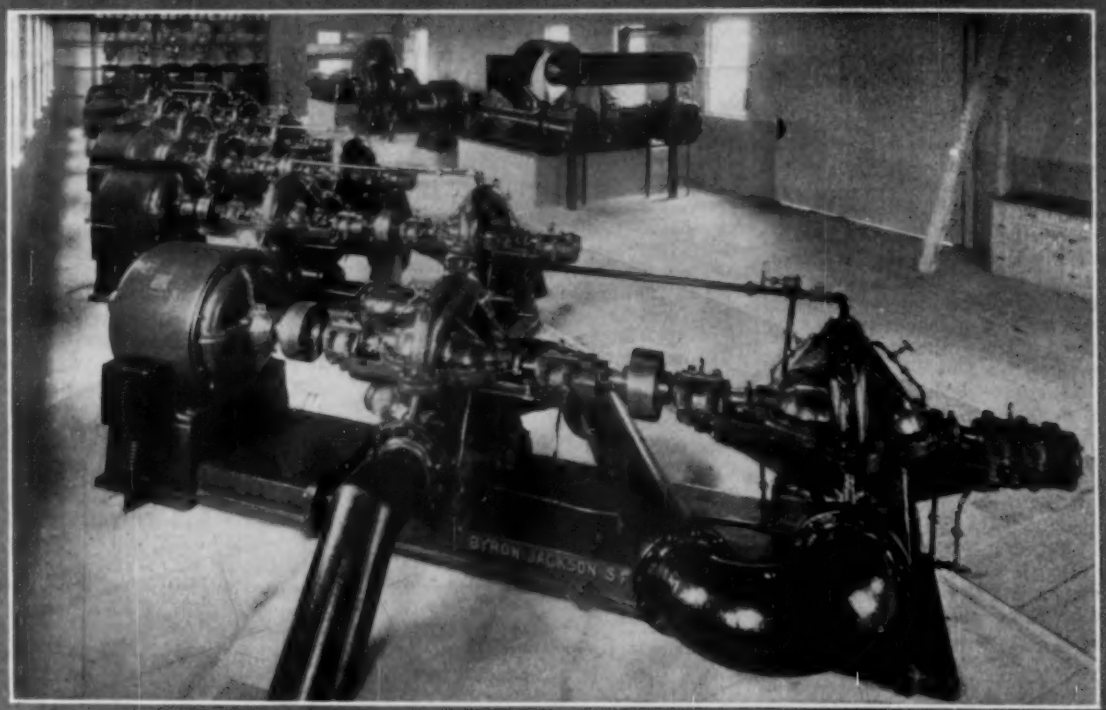
$4 for 10 Days' Road Work

TURKEY, according to reports, is embarking on a good roads program and is requiring that all male citizens as well as foreigners of six months' residence, put in ten days of yearly road service. A $4 fee, however, will exempt any individual from actual work.

Road Construction and Maintenance in the 1930 Municipal Index

A SERIES of four articles on street and road construction and maintenance by prominent engineers has been prepared specially for the 1930 Municipal Index. The first article, on mixed-in-place bituminous concrete construction, was written by D. P. MacWhorter, Engineer, Georgia State Highway Department, who has been in charge of the experimental work with this new low-cost type pavement. The maintenance of bituminous streets and highways is discussed by George W. Craig, of Craig, Skidmore & O'Brien, Chicago, Ill.; the value and place of concrete roads in cities is discussed by Clifford Older, of Consoer, Older & Quinlan, Chicago, Ill.; and brick pavements for city streets and interurban highways by Harry C. McClure, City Engineer, Flint, Mich.

Water Works Pumps



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WHO'S WHO IN CITY & COUNTY ENGINEERING

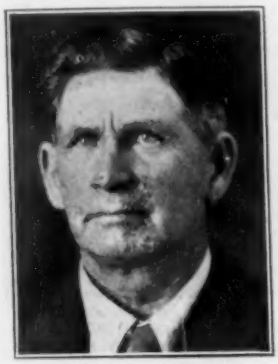
One of a Series of Portraits of Engineering Officials, Which Has Appeared Monthly Since April, 1928

HARRY C. JESSEN
City Engr., Salt Lake City, Utah
(Appointed 1926)

LEVI GOODRICH
City Engr., Marlin, Texas
(Appointed 1913)

JOSEPH M. SCHMIT
City Engr., Lewistown, Mont.
(Appointed 1924)

PAUL R. BROWN
County Engr., Marion Co.
Indianapolis, Ind.
(Appointed 1929)



JOSEPH E. AITKEN
City Surveyor, Spanish Fork, Utah
(Appointed 1922)

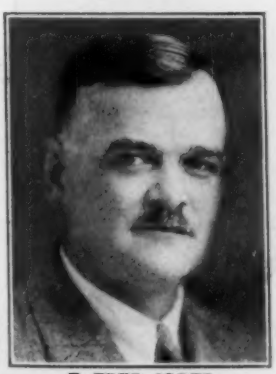
JOHN L. STEWART
County Engr., Franklin Co., Brookville, Ind.
(Appointed 1916)

W. P. TARBELL
City Engr., Fargo, N. D.
(Appointed 1926)

E. SANDQUIST
City Engr., Havre, Mont.
(Appointed 1925)

ULYSSES S. HANNA
County Engr., Monroe Co., Bloomington, Ind.
(Appointed 1921)

W. A. EHRMAN
County Engr., Howard Co., Kokomo, Ind.
(Appointed 1903)



T. FRED OLDER
City Engr., Ypsilanti, Mich.
(Appointed 1919)

RICHARD G. MANLEY
City Engr., Upland, Calif.
(Appointed 1921)

J. L. MURRAY
Highway Commissioner, Town of Warwick, Apponaug, R. I.
(Appointed 1925)

JOHN S. ROBERTS, JR.
County Engr., Buck Co., Bristol, Pa.
(Appointed 1924)

Fireproof Buildings for Equipment & Storage

SERIES "A"
Pitched Roof Types

TYPE 1

TYPE 2

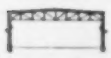
TYPE 3

TYPE 3-M

TYPE 4

SAWTOOTH TYPE

SERIES "B"
Flat Roof Types



TYPE 1

TYPE 2

TYPE 3

TYPE 3-M

TYPE 4

TYPE 4-M

Truscon Standardized Buildings provide efficient daylight garages for trucks and fireproof storage houses for supplies. They are furnished in all types and sizes with flat, pitched, monitor, lantern or sawtooth roofs and with steel windows, steel doors and insulated Steeldeck roofs. Quickly erected and economical in cost. Truscon Buildings are permanent, yet can be readily dismantled and re-erected in new locations. They are extensively used by public works departments and contractors. Write for suggestions and quotations on buildings suited to your requirements.

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YOUNGSTOWN, OHIO

Truscon Steel Company of Canada, Limited,
Walkerville, Ontario

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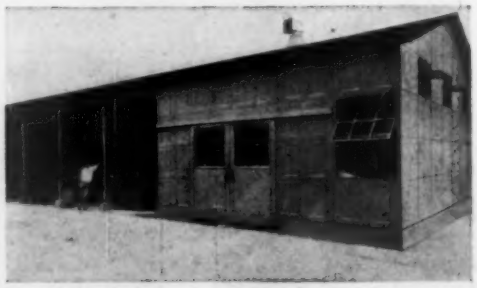
Storage shed for supplies, Clear Span Truscon Building with canopy

Storehouses are furnished in any type or arrangement to meet requirements



Combination of garage and repair shop for road building equipment

Daylight Truscon Garage with unobstructed floor space and insulated Steeldeck roof

ITEMS and ABSTRACTS for PARK AND PLAYGROUND DEPARTMENTS

Educational Authorities Should Supervise

LONSDALE J. ROPER, M.D., Director, Department of Public Welfare, Portsmouth, Va., writes in reply to the letter addressed to the City Manager.

"I believe that all schools should have sufficient play areas in order that a continuous program may be put on by the educational authorities. It seems that the supervision of playgrounds should be directly under this branch of government in so far as it has a program for nine months of the year. This program could very easily be carried on by it for the other three months."

Recreation Department Deserves Equal Recognition with Health Department

HENRY TRAXLER, City Manager of Janesville, Wis., writes:

"My idea of the size of site for elementary schools is that they should not be less than five acres and can be as large as twelve acres. For High School sites I would recommend from twelve to twenty acres if the site does not contain the usual athletic field for competitive sport.

"Playgrounds should be made a part of the school grounds and the school facilities used in connection with the playgrounds in order to economically administer this work. The entire recreation program should be under the jurisdiction of the municipality and not the school board. This department of recreation should be as well organized and administered as a good health department."

The Ideal Size, Location and Administration for Municipal Playing Areas

This Page Is Devoted to a Continuation of the Discussion Begun Last Month by City Managers and Other Public Officials of the Questions:

1. ***"What size do you consider ideal for elementary and high school sites and what progress has your city made in acquiring such sites?"***

2. ***"Do you believe that children's playgrounds ought, wherever possible, to be located on school property? If so, ought the city government or the board of education to have responsibility for administering such playgrounds when the school is not in session?"***

Cooperation and an Adequate Budget Outstanding Essentials of a Successful Recreation System

IN a number of larger cities there is an interlocking system, assuring a coordinated, evenly developed city-wide program of recreation. Such a system is described by I. C. Pearce, Commissioner of Parks, Playgrounds and Public Buildings, of St. Paul:

1. "I consider that a two-block area, which varies between 5 and 8 acres, is of sufficient size for an elementary school playground. St. Paul has acquired a few such areas from a recent bond issue, and the plan is working out very nicely.

"There is a decided handicap in attempting to acquire large tracts of property in thickly populated districts. The costs are exorbitant.

2. "It is necessary to have playgrounds adjacent to every school building because organized physical work is part of the school curriculum. It would be a mistake to say that all playgrounds should be adjacent to schools, as park systems throughout the country today are considered recreation grounds and public play is encouraged.

"The structure of the city government will determine whether the recreation program should be handled by a department of education, or by a park system, or by a separate recreation commission.

"In any event there should be a recreation director in complete charge of all of the play activities, with the hearty cooperation of the department of education, the park department, and all organized groups interested in play.

"In St. Paul we have the dual system, although the Department of Education does not provide leadership over its playgrounds after the closing of the school year, so that I might say that the entire recreation program is carried on by the Playground Bureau, which is a part of the Department of Parks, Playgrounds and Public Buildings. If any other organization handled the recreation program, it would be necessary that there be a well-defined and specific budget controlled by the recreation head who was administering the program.

"Further, it would be necessary for regulations to prevent any of the recreation monies being used by any other department. I only emphasize that it matters not which department is administering the recreation program providing they have the cooperation of all departments controlling recreation facilities and a definite budget to work upon."

Recreation Areas Are for Use of All the People

GEORGE W. ROGERS, Executive Head of the Melrose, Mass., Park Commission, clarifies a point on which, to judge by general practice, there has been some confusion; that is, the mutual enhancement of value to both school and community of placing the neighborhood playground in close proximity to school property. More common practice is to locate play areas without regard to the school plant, or to consider the usually necessarily limited school playground an adequate community recreation center.

He says:

"Question 1 should be decided by school authorities, but I firmly believe that an elementary school should have approximately 8 acres; a high school at least 15. This is a difficult matter in the East, where land is highly developed.

"As to question 2, I firmly believe that wherever possible, the neighborhood playground should be located *adjacent* to school property so that the same children that use the school and the same people that pay the taxes for the schools may get the full benefit of the playground. You will notice that I have italicized the word adjacent. The last part of this question is difficult to answer by any one connected with the schools or with recreation; the majority of school authorities feel that the responsibility should be placed with the school department; the majority of workers in the recreation field—of whom I am one—believe it should be under a muncipal recreation department. Playgrounds and recreation areas are provided by the taxpayers and—or should be—for use of all the people."

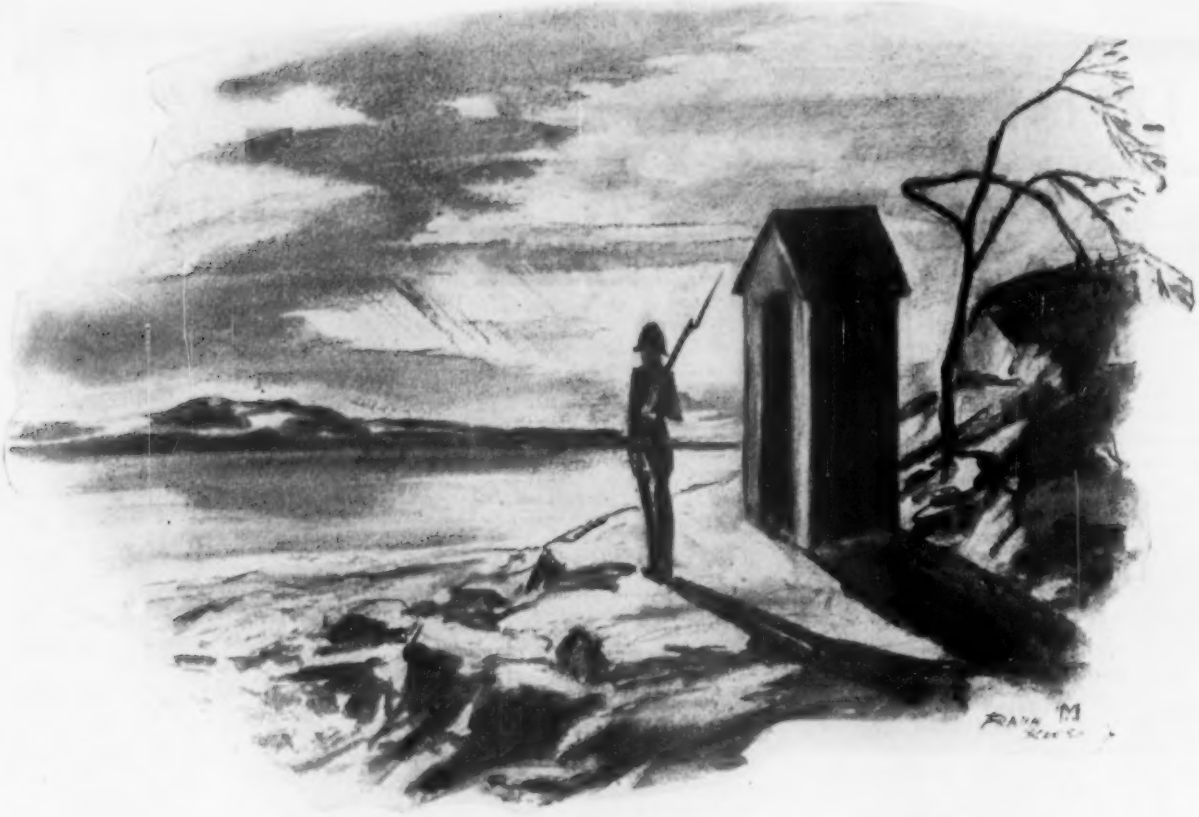
School Sites Provided to Conform to City Plan Recommendations

FROM Kenosha, Wis., where standards for recreation areas have been officially adopted, City Manager William E. O'Brien writes:

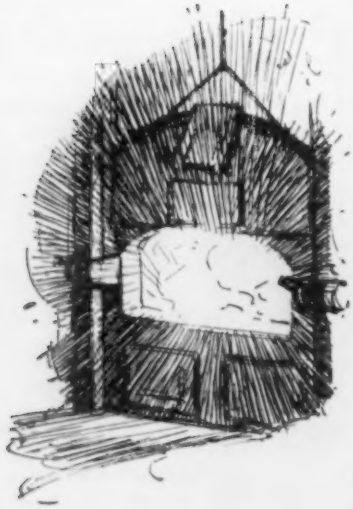
1. "We consider the ideal site for elementary schools to be between five and six acres. At the present time we are not contemplating the purchase of additional land for high school building purposes, but we have one parcel for this purpose that originally contained 33 acres."

2. "We believe that children's playgrounds should be located on the school property, and therefore have set the size for such sites at the above-named figure.

"At the present time the city of Kenosha has five additional school sites which have been purchased far in advance of the needs of the city, and which will provide appropriate areas and facilities for neighborhood playgrounds. These sites have been provided on the principle that an elementary school should serve territory within a half-mile radius, a junior high school within a mile radius, and a high school within a 1½-mile radius."



Unsung Guards Keep Watch



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Refuse Disposal Plants

ITEMS and ABSTRACTS on REFUSE COLLECTION AND DISPOSAL

Fredericksburg Starts New System, Furnishing Cans Free

FREDERICKSBURG, VA., a city of 7,000 population and 800 acres square, built a new incinerator during 1929, at a cost, not including the site, of $22,000. The city collects mixed garbage and refuse from its entire population. The cans are placed in the back yards and are collected from the street. Two 1½-ton trucks with special bodies are used for this work. The city furnishes garbage cans free, the cans being steamed out at the incinerator after each collection. Eight men are employed all year round, collections being made three times a week in summer and twice a week in winter. The haul to the incinerator is about 1½ miles. There are no special assessments or taxes for this service, the collection and disposal being financed out of current taxes.

L. J. HOUSTON, JR.,
City Manager.

Householder Pays for Collection in Palo Alto

IN Palo Alto, Calif., a city of 14,000 population with an area of 3.45 square miles, the 1928 contract for the collection of mixed garbage and refuse was $19,408. The contractor uses three 1-ton Ford trucks and one 2½-ton Federal, and a crew of eight men, summer and winter. From one to six collections per week are made in all parts of the city, for which the householders are charged the following rates:

	Per Month
One per week	$0.65
Twice per week	1.00
Three times per week	1.50
Six times per week	3.00

All occupied premises within the city are required to receive inspection and garbage collection service, the frequency of the service being determined by the Board of Public Works.

The maximum amount of waste that collectors are required to move at each call is the contents of the garbage can and ½-cubic-yard of rubbish, such as ashes, tree trimmings, garden refuse, etc. The rubbish must be placed in a large box placed near the garbage can.

During 1928 about 5,145 tons of mixed garbage and rubbish was collected. All cans are placed in the back yard; about 90 per cent of the collections being made from the street and the remainder from alleys.

After collection, the garbage is hauled about two miles to the Dundon high-temperature incinerator owned by the city. About 18 tons of mixed garbage and rubbish per day are handled at the incinerator in the summer and about 16 tons in winter. The total cost for disposal in 1928, including depreciation, was $8,956, divided as follows: for payroll, $5,790.50; for maintenance and repairs, $838; and for all other operating costs, $2,327.50.

The incinerator was built in 1912 and has an estimated useful life of 20 years. It is now operating under a considerable over-load, which will make it necessary very shortly to install additional burning cells or to construct an entirely new and larger plant at some other location. No plans have been prepared for enlarging the plant, but the matter is being studied by the Board of Public Works.

J. F. BYXBEE,
City Engineer.

Garbage Collection and Disposal Costs in Fort Smith

DURING 1928 garbage collection in Fort Smith, Ark., cost that city $12,851.57; of this total $12,504.19 was for payroll and the remainder was charged against maintenance and operating costs. The city has a population of 45,000 and an area of 13.33 square miles and employs fifteen men and two inspectors for the collection of its garbage, using nine wagons and three teams, one Dodge 1½-ton truck, one Ford truck with specially built body, one Star 1½-ton truck and two Chevrolet 1-ton trucks. Garbage is collected once a week in the residential sections and daily in the business districts, and is hauled four miles to the incinerator.

Disposal costs for 1928 were $5,550 for payroll, $2,185.70 for maintenance and repairs, and $939.45 for all other operating costs, making a total of $8,675.15. The incinerator was built in 1923 at a cost of $24,000. Collection and disposal are financed through fees charged to business houses.

EARL HENDERSON,
Commissioner of Accounts and Finance.

Storms and Discarded Cars Add to Refuse Collections

HOLLYWOOD, FLA., has a summer population of 2,500 and a winter population of approximately 10,000. The area of the city is 30 square miles. During 1928, approximately 2,000 tons of mixed garbage and refuse were collected, and during the summer months the Department of Health and Sanitation removed all the junk discarded on vacant lots around the city, including 49 discarded cars and trucks, storm refuse, etc., amounting to approximately 300 additional tons.

The city uses two 2½-ton White trucks, one with 3-yard Wood hydraulic hoist body equipped with side boards and having a capacity of approximately 5 cubic yards, and the other with a 5-yard Wood hydraulic hoist body similarly equipped and carrying approximately 8 cubic yards. Four men are employed in summer and seven in winter, the residential sections being covered twice a week and the business districts three times a week in summer and daily in winter. In winter the resort hotels have collections daily, including Sundays. The garbage is hauled about 2 miles to a point where it is disinfected and burned in a pit. About 2½ tons of mixed garbage and rubbish are handled per day in summer and 10 tons in winter.

Collection costs for 1928 totaled $7,435.61, including $5,242.88 for payroll and $2,192.73 for maintenance and operating costs. The disposal payroll was $1,134, $100.16 covering all other operating costs. Collection and disposal is financed by an appropriation from the General Fund.

S. D. MACREADY,
Director, Department of Health and Sanitation.

Two 14-Year-Old Incinerators Still Going Strong

MEMPHIS, TENN., has three garbage incinerators, two built in 1915 and one in 1927, at $1,500, $1,700 and $4,000, respectively. The two older incinerators are still handling their share of the city's refuse.

The city has a population of 280,000 and an area of 55 square miles, all of which is served by municipal collection. Garbage and refuse are collected together, the ashes being kept separate. About 30 per cent of the material is collected through alleys, the cans being placed at the back gate.

During 1928 approximately 44,160 tons were collected, at a total cost of $218,000, $142,000 of which was for payroll. One-mule carts and 1½-ton and 2-ton trucks are used for collection, employing 301 men in summer and 289 men in winter. Garbage is collected twice a week in summer in the residential section and once a week in winter, collections in the business district being made daily. Ashes are collected once a week in winter from residences. Garbage is hauled about 4½ miles to the incinerator after collection.

Approximately 200 tons are handled daily at the disposal plants in summer and 150 tons in winter, at a total cost of $38,175.44 in 1928. Of this amount, $16,576.18 was for payroll, $3,541.94 for maintenance and repairs, and $18,063.02 allowed for all other operating costs. Collection and disposal are financed from general taxes. No junking is allowed in the city.

WILLIAM H. HUGO,
General Superintendent, Garbage and Street Cleaning.

The Garbage Section of the 1930 Municipal Index

THE section of the 1930 Municipal Index devoted to the subject of garbage collection and disposal will consist of a very complete compilation of statistics on this important municipal activity, from 557 cities and towns in the United States, based on original reports received from city engineers.

VOTING MACHINES

Apply a Sound Business Principle to All Elections

AMERICAN business and industrial leaders have eliminated the human element as far as possible from all problems of computation. They know the truth of the adage—"to err is human."

In the handling of elections it is equally important to guard against inefficiency and human error.

The voting machine does this. Its simple operation, automatic tabulation of the votes and the fact that it is impossible to spoil your ballot assure the community using voting machines an election conducted with the utmost efficiency and dispatch at a material saving in cost.

Voting machines actually will pay for themselves out of economies affected.

The coupon will bring you complete information regarding the experiences of other cities and towns which use voting machines.

Automatic VOTING MACHINE CORPORATION
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Send This Coupon

TODAY

We are interested to learn how voting machines have saved money and speeded up elections for over 2,000 cities and towns.

Name..... Title.....

Address .....

City and State.....

A-17

"KEEP YOUR STREETS CLEAN"

ITEMS ON STREET CLEANING AND SNOW REMOVAL

Hoquiam, Wash.

HOQUIAM'S population is 15,000. The fall of snow in this city on the Pacific Ocean is very light. In 1928 only one light snowfall was cleared from the walks, using a Fordson-equipped rotary broom, at a total cost of $50 for labor, oil and grease. The bordering parking strips take care of accumulated snow in nearly the whole area cleared. Traffic in the streets causes melting of most of the snow. The rotary broom is used to clear the gutters, and any spots which tend to become icy are later picked up by hand, using Street Cleaning Department trucks.

Fulton, N. Y.

H. S. ANDREWS, Commissioner of Public Works, writes that Fulton, a city of 13,047, situated on the Oswego River and Canal, about 12 miles from Lake Ontario, appropriated $4,000 for snow removal in 1928-29 and the same amount for 1929-30. There are 35 miles of streets to be cleared, 10 per cent business streets and 90 per cent residential.

Jackson, Mich.

ACCORDING to W. R. Cruse, City Engineer, Jackson, a city of 60,000 population on the Grand River, about 75 miles west of Detroit, has about 10 miles of streets to be kept clear, approximately 80 per cent of which are in the residential section. The 1928-29 appropriation for snow removal was $1,000. This has been increased for 1929-30 to $5,500.

Leavenworth, Kans.

LEAVENWORTH is the oldest city in the state. It is situated in the northeastern part of Kansas on bluffs overlooking the Missouri River. It has a population of 21,342 and an area of 6.5 square miles. No special equipment is used for snow removal in Leavenworth, all work being done with trucks, wagons, graders, etc., which are used in summer for street grading. Clearing snow from its 35 miles of paved streets, 90 per cent of which are residential streets, requires an expenditure of from $800 to $1,200 per year, which is taken as required from general funds. Walter V. Thomas, City Engineer, is in charge of snow removal.

Lawrence, Kans.

LAWRENCE is located on the Kansas River, 40 miles west of Kansas City, and has a population of 15,000. B. M. Babb, City Engineer, reports that no special appropriation is made for snow removal, as this activity is included in the maintenance fund. Snow is removed only from the business section. Snowfall has been, for a decade or so, comparatively light.

Corning, N. Y.

CORNING, in Steuben County, N. Y., on the Chemung River, 18 miles west northwest of Elmira, clears all streets in its business and residential sections, money for this purpose being appropriated from current balances.

Allentown, Pa.

ACCORDING to the report of E. W. Meckley, City Engineer, Allentown, the 1928-29 appropriation was $5,000, with which approximately 25 miles of streets were cleared of snow, including 10 miles of the business streets and 15 miles of the residential streets. This city has a population of 103,000 and an area of 11.1 square miles and is situated on the Lehigh River about 56 miles north northwest of Philadelphia.

Auburn, N. Y.

AUBURN, N. Y., has a population of 38,000 and an area of 8.4 square miles. It is situated about 25 miles southwest of Syracuse on an outlet of Owasco Lake, in the Finger Lakes region of New York State. J. J. Tehan, City Engineer, reports that for clearing its 70 miles of streets, 80 per cent of which are residential streets, an appropriation of $5,000 was made in 1928-29. For 1929-30, this amount has been increased to $6,000.

Bangor, Maine

WITH a population of 26,000, Bangor is on the west bank of the Penobscot River at the mouth of the Kenduskeag, about 60 miles from the ocean and 75 miles northeast of Augusta. H. W. Wright, City Engineer, reports that the appropriation for the calendar year 1929 was $7,500. This amount will be used to clear the 115 miles of streets in the city, 93 per cent of which are residential streets and the remainder in the business section.

Joliet, Ill.

JOLIET makes no appropriation for snow removal. It has a population of 45,000 and a total of 95 miles of streets to be cleared of snow, 95 per cent in the residential district. This city is on the Des Plaines River, 37 miles southwest of Chicago. Samuel C. Shepley, Commissioner of Streets, is in charge of snow removal.

Kent, Ohio

THIS city, on the Cuyahoga River, 11 miles northeast of Akron, has a population of 8,000 and has about 16 miles of streets to be cleared of snow, 90 per cent residential. According to the report of P. H. Evans, City Engineer, the 1928-29 appropriation was $2,000, which has been increased to $3,000 for 1929-30. The city owns no special snow-removal equipment other than horse-drawn snow-plows for cleaning sidewalks.

Lakewood, Ohio

LAKEWOOD, on Lake Erie, adjoins Cleveland on the west and is a rapidly growing residential suburb, the present population being approximately 70,000. Snow is plowed and spread by power blade on 25 miles of main streets. The remaining 65 miles are plowed and bladed as necessity demands. Seven miles of street are cleared by power by the street-railway company with power plow, broom and blader. The windrows of snow are further bladed by the city. An annual appropriation of $1,500 is made for snow removal, according to the report of E. A. Fisher, City Engineer.

New York Is Bound to Become Cleaner

AN intensive campaign to promote street and outdoor cleanliness has been carried on by the New York City Street Cleaning Department in cooperation with the Committee of Twenty of the New York Academy of Medicine. The Departments of Health, Police and Markets have been assisting in the effort for a cleaner city.

Special inspectors appointed by the Department of Street Cleaning assisted during the summer by a squad of eighteen policemen and one representative for each district from the Department of Health and one from the Department of Markets, have made a house-to-house canvass of each district of the boroughs of Manhattan, Brooklyn and The Bronx.

During this canvass, they have served owners, tenants and storekeepers with literature written in English, Jewish and Italian specifying the code of ordinances. Personal instructions were given on how to conform with the rules, regulations and ordinances of the Health, Police, Street Cleaning and Market Departments.

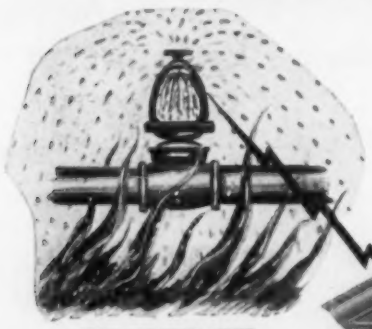
This drive is being continued and violations are noted by a careful system of rechecking. Violators were served a warning notice for the first offense, and if after a second re-check they were still found to be violators, they were given a summons and taken to court.

This campaign has resulted in the distribution of 324,748 language cards, the service of 56,438 warning notices, the issuance of 1,605 summonses, and the infliction of fines amounting to $1,673 and 1,580 sentences.

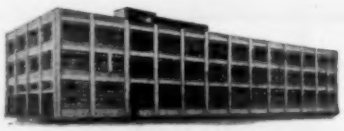
ALFRED A. TAYLOR.
Deputy Commissioner, Department of Sanitation, New York City.

There will be a series of valuable articles on snow removal and street cleaning in the 1930 Municipal Index with one article that dramatizes fighting a blizzard.

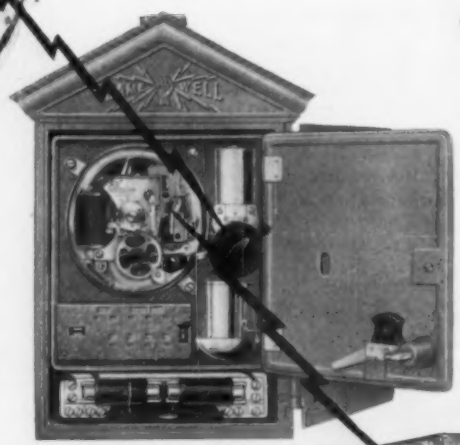
The SPRINKLER WATCHMAN



FIRE

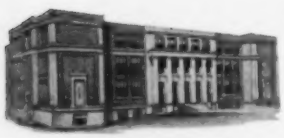


FACTORIES AND WAREHOUSES

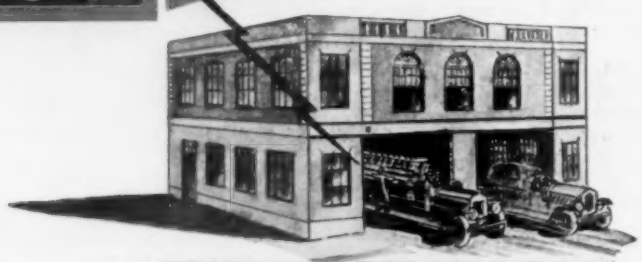


HOSPITALS AND INSTITUTIONS

THEATRES AND STORES



SCHOOLS AND COLLEGES



FIRE STATION

Connected up with the riser of a sprinkler system, the 1929 Model Peerless Fire Alarm Box *Master Model* makes an efficient *Sprinkler Watchman.*

Such connections in your city will add to the efficiency of your fire department. They notify the fire department as the sprinklers start to operate so that the firemen arrive at a fire while it is still small. Then, should the fire be beyond control of the sprinklers, the firemen can extinguish it. In case the sprinklers have already put out the fire, the firemen can shut off the water and prevent any unnecessary loss from that source.

Fire Chiefs and Superintendents of Fire Alarm in many cities have already recognized the value of such a connection and have recommended it to the business houses, theatres, institutions, factories, stores and other types of sprinkler protected property. Among these cities are:

Fresno, Calif.	Santa Ana, Calif.	Denver, Colo.
Columbus, Ind.	Huntington, Ind.	Maysville, Ky.
Lewiston, Me.	Lawrence, Mass.	Lynn, Mass.
Gardner, Mass.	Binghamton, N. Y.	White Plains, N. Y.
Asheville, N. C.	Burlington, N. C.	Charlotte, N. C.
Cleveland, Ohio	Bethlehem, Pa.	Wichita Falls, Texas
Burlington, Vt.	Newport News, Va.	Norfolk, Va.

In Denver alone, there are 100 or more of these installations, many of which have been in service for as long as ten years.

Insurance interests have also recognized this *Sprinkler Watchman,* and have recommended its installation in various sections of the country; made allowances in rates and in some cases have even allowed factories to dispense with watchmen.

(If you would like a wiring diagram and further details on the *Sprinkler Watchman,* write to our nearest office.)

THE GAMEWELL COMPANY

"A Box A Block"

NEWTON UPPER FALLS, MASS.

"HINTSAND POINTERS" PAGE for DEPARTMENTS OF PUBLIC SAFETY

Practical Value of Crime Statistics to Police Departments

ADMITTING that the current outpouring of statistics—especially crime statistics—scarcely keeps pace with the volume of abuse and ridicule poured upon them, none-the-less and with due caution, we should like to insist that statistics have their value. Let us take, for example, "An Analysis of 11,180 Misdemeanor Cases" recently made by the Cincinnati Bureau of Governmental Research. They find that unemployment shows a striking correspondence with prostitution, petit larceny, drunkenness and disorderly conduct, whereas gambling, embezzlement and assault and battery are more common among the employed. An extraordinarily and disproportionately high misdemeanor rate is found among persons between 19 and 27 years old. Ten o'clock in the evening proves the daily high tide of misdemeanor arrests with low ebb between five and six in the morning; Saturday night marks the weekly flood. The bearing of these and similar conclusions upon the problem of police patrol is perfectly apparent. Crime spot maps have an equal significance in this matter. Their figures on discharges, fines and sentences raise pertinent questions concerning the administration of the municipal courts. Statistics are useful not because of the questions they answer but because of the questions they raise.

A Fire College in Los Angeles

THE Fire Department of Los Angeles is sponsoring the establishment of a Fire College in the form of a 90-day course to be given beginning March 31. Classes will be held five days each week and will cover a very comprehensive curriculum. Those who successfully complete the course will receive a diploma. No tuition will be charged. Chief Scott has invited fire departments on the Pacific Coast to participate in this important enterprise.* This is based on the well-founded hope that those who attend the course will carry back what they learn and be an instrument for the instruction of their fellow workers. The project has the endorsement of the International Association of Fire Chiefs. The huge success of much more modest undertakings leaves no doubt of the fruitfulness of this one.

Police Officials On the Air and In the Air

THE new year opens with some of our police officials getting the air, others taking it, and at least one taking to it. The United States Radio Commission has just authorized two city police departments, those of Minneapolis, Minn., and Tulare, Calif., to use short-wave frequencies in the creation of crime detection and criminal apprehension services. This brings the total of cities using the radio in police work to over twelve. The excellent results which Detroit and others of them are obtaining are discussed elsewhere in this issue.* This should be an important step in the ever-pressing problem of keeping headquarters in touch with the officer on patrol and him in touch with headquarters. Mr. Whalen is putting New York's finest in the air more literally by the establishment of an airplane patrol. Twelve members of that city's force who had been in training for several months inaugurated the new service on the first of the year. The department plans within a short time to have four Vought Corsair planes available for fast patrol work. For the time being both of these may be regarded as novelties, but they are likely to prove an important adjunct to existing police methods.

Another New York innovation is the opening of a Crime Prevention Bureau, also in New York City. The entire force of patrolwomen have been assigned to this Bureau until it is possible to replace those who show no aptitude for the work with trained social workers. The new head of the Bureau, Mrs. Murray, has had extensive experience in Travelers' Aid and other social work. It is hoped that by the development of adequate statistical and other information on crime sources to give better orientation and coordination to the work of the numerous welfare organizations in the city.

Preparedness for Disasters

NO one likes to look for trouble, but that's a poor reason for not being prepared for any eventuality. The city of Santa Barbara, in California, has, tucked away in its files, a Plan for Meeting Disaster or Emergency. Most cities would doubtless hesitate to do such a frank and practical thing. Their attitude would be something like the superstition about making a will. But public emergencies will happen, do what we will. Isn't it the sensible thing to do, though? Then don't put it off the way we all put off making our wills.

Parked Cars as Handicaps to Fire Fighting

LITTLE-USED, narrow streets may seem to offer a tempting relief in the ever-pressing parking problem. But let us not overlook the bother they may cause in case of fire. An eastern city recently experienced a fire in such a street. A score of parked cars lining both curbs completely blocked the entrance of bulky fire apparatus. The firemen were forced to drive some of them out of the street and lift others onto the sidewalk. As it chanced, there was no great loss attributable to this inconvenience. It is easy to imagine a condition where such an impediment might have serious consequences.

Are You Warning Your Citizens of Gasoline Dangers?

PUBLIC safety will be increased if the public are warned more frequently that the handling of gasoline requires ceaseless vigilance. A bulletin of the Wisconsin Industrial Commission notes the following items culled from recent experience:

The employees of a large oil company were filling a 1,000-gallon tank. It overflooded and someone hastened to throw an electric switch to turn off the power. A terrific explosion caused the death of three men and heavy property damages. A vapor-proof switch would have averted this.

A Milwaukee garage had its storage tanks in the basement and also a heating plant. Result: the wreck of the garage and injury of five persons.

Two firemen were badly burned when a drum of gasoline exploded in a barn in which they were attempting to put out a fire.

But why go on? These are a few of last month's accidents; there will be as many more this month, all preventable with a little care or comparatively trivial expense.

Police School of Instruction Announces 1930 Schedule

THE 1930 schedule for the Police School of Instruction which was established a year ago by District Attorney Robert T. Bushnell, of Middlesex County, Massachusetts, has been announced and embraces the following lectures by men experienced in various divisions of the field:

Modern Criminal Investigation, Methods of Particular Types of Criminals, Interrogation of Witnesses and Victims, by State Detective Edward J. Sherlock, of the Massachusetts State Police.

General Work of a Police Officer, by Cornelius F. Cahalane, former Deputy Chief Inspector of the New York Police Department.

Finger Prints: Where to Look for Them, How to Find Them, How to Take Them, and How to Use Them, by Inspector James R. Claflin, head of the Finger Print Bureau of the Boston Police Department.

Investigation of Automobile Accidents, by George A. Parker, Registrar of Motor Vehicles of Massachusetts.

Suggestions to Police Officers from the Medical Examiner's Viewpoint, by Dr. George Burgess Magrath, Medical Examiner of Suffolk County.

Firearms, Bullets, and Cartridges, by Capt. Charles J. VanAmburgh, ballistic expert of the Massachusetts Department of Public Safety.

The Law of Arrest, Criminal Law for Police Officers, Rules of Evidence for Police Officers, and The Police Officer in the Superior Court, by District Attorney Robert Bushnell.

Any police officer in the state of Massachusetts may enroll for the course, which is free of charge.

* Application for admission to this course must be received before March 24 and should be addressed to Chief Ralph J. Scott, Los Angeles Fire Department.

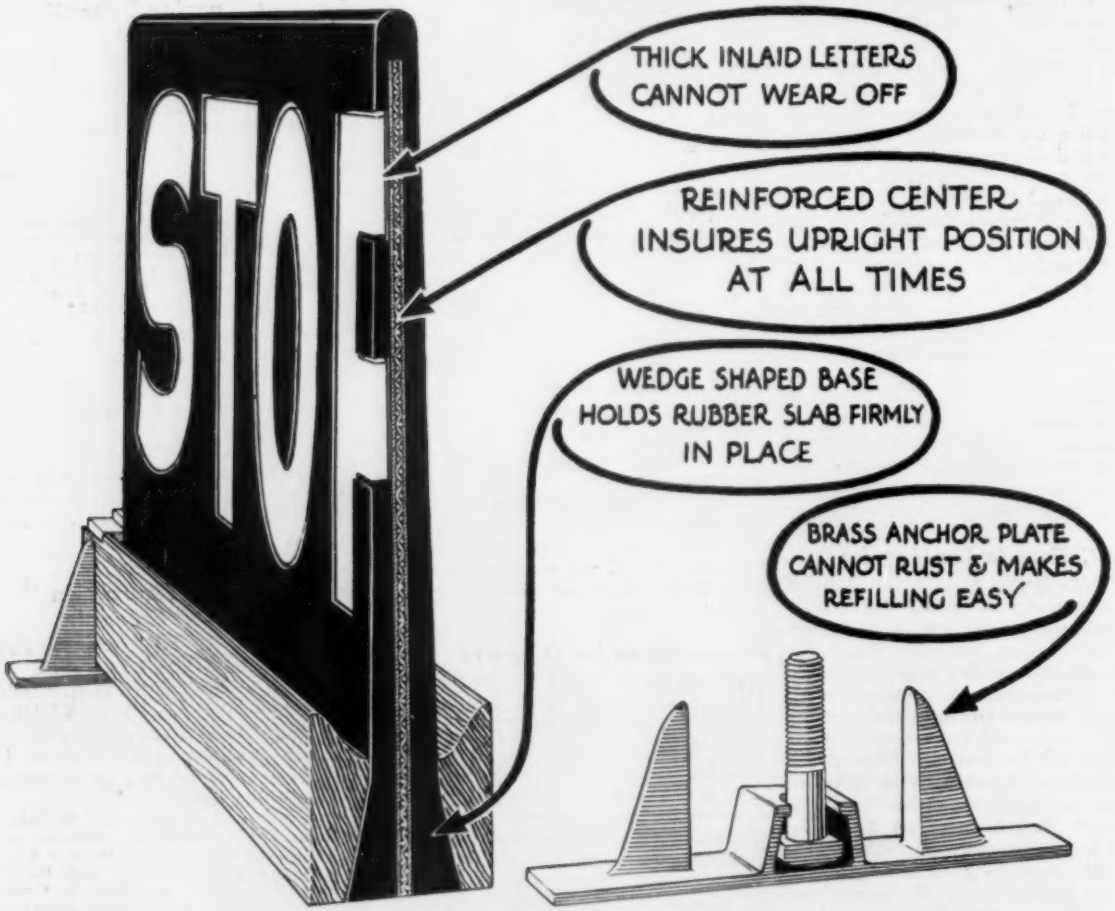
* See page 151.

STANDARD Sure Stop MARKER

Announcing the 1930 Perfected

Rubber Traffic Signal

4 MARKED IMPROVEMENTS


STOP
THICK INLAID LETTERS CANNOT WEAR OFF
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(Appointed 1929)

GEORGE E. DIETRICH
Fire Chief, Monaca, Pa.
(Appointed 1926)

W. F. SWARTWOOD
Police Chief, Stroudsburg, Pa.
(Appointed 1927)

WILLIAM F. RUSSELL
Police Commissioner, Chicago, Ill.
(Appointed 1928)

CECIL B. GRAVES
Fire Chief, Wellsville, N. Y.
(Appointed 1924)

WHO'S WHO IN PUBLIC SAFETY

The 26th of a Series of Portraits of Fire and Police Chiefs, Which Has Appeared Monthly Since January, 1928

WILLIAM H. STRINGHAM
Fire Chief, Saranac Lake, N. Y.
(Appointed 1928)

HORACE KELSEY
Police Chief, Albion, N. Y.
(Appointed 1927)

MICHAEL PELOT
Police Chief, Freeland, Pa.
(Appointed 1917)

JOHN M. BECK
Fire Chief, Lehighton, Pa.
(Appointed 1902)

ALBERT COOPER
Police Chief, Morrisville, Pa.
(Appointed 1924)

GEORGE D. BAUERSFELD
Fire Chief, Tarrytown, N. Y.
(Appointed 1929)

WILLARD M. McKINNEY
Fire Chief, Downington, Pa.
(Appointed 1930)

JOHN J. MALONEY
Fire Chief, Haverstraw, N. Y.
(Appointed 1928)

A. P. ALLEN
Fire Chief, Ford City, Pa.
(Appointed 1926)

THE SAME HOUSE

¶ Does your present method of assessment provide a safeguard which will assure uniform building taxation?

¶ Our experience indicates that most assessment systems fail in this particular.

¶ Scientific Tax Equalization Service by The Lloyd-Thomas Co. provides experts who will install a system to fit your individual needs—based on your laws—and distinctly not a ready-made, quantity production system.

¶ The Service is complete—covering all or any portion of the items subject to real property taxes.

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¶ Please ask for booklet A-103.

The Lloyd-Thomas Co.

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MINNEAPOLIS
CHARLOTTE, N. C.
DES MOINES

ST. LOUIS
MEMPHIS
ATLANTA
BIRMINGHAM
DALLAS
SANFORD, FLA.

MUNICIPAL CATALOGS

THE AMERICAN CITY should always be mentioned when writing for this material which is furnished free.

Keep your files up to date by checking over these items each month and writing for those you need.

ASPHALT PAVEMENTS

Complete information regarding the paving of city streets and highways with Texaco asphalt may be secured without obligation by city officials from the Texas Co., Asphalt Sales Dept., 17 Battery Pl., New York.

DUAL-DRIVE MOTOR GRADERS

The Austin 6-cylinder Model 12½-25 dual-drive motor grader, which has been created to meet the demand for a dual-drive model midway between the Austin 10-20 and 15-30 models, is described in Bulletin No. 1146 of the Austin-Western Road Machy. Co., 400 N. Michigan Ave., Chicago, Ill.

A NEW DIRT MOVER

Full information regarding the new Warco Model T 2-yard wheeled scoop recently developed by W. A. Riddell Co., Bucyrus, Ohio, will be sent on request.

BRONZE TRAFFIC LINE MARKERS

The Saf-T-Lin Marker Corp., Hartford, Conn., has developed a cast bronze, chromium-plated traffic marker which is easily installed, strong, readily visible at all times, and may be installed in any kind of pavement, to mark safety zones, parking spaces, stop lines, etc.

ECONOMICAL PIPE CUTTING

Ellis & Ford Mfg. Co., 38 Piquette Ave., Detroit, Mich., will gladly send complete data and prices on the Ellis pipe cutter, which is made in two sizes, for pipe 4 to 8 inches in diameter and 4 to 12 inches in diameter.

REINFORCED CONCRETE PIPE

Newark precast reinforced concrete sewer pipe is made by the Newark Concrete Pipe Co., 462 Broad St., Newark, N. J., which will gladly send complete information regarding its use, without obligation, on request.

SLUICE-GATES

Complete information and prices on Rodney Hunt sluice-gates, butterfly, flap and mud valves, shear and filler gates, may be secured free on request from the Rodney Hunt Machine Co., 36 Lake St., Orange, Mass.

CAST IRON PIPE

Inquiries regarding Acipco Mono-Cast pipe for municipal water installations are invited by the American Cast Iron Pipe Co., Birmingham, Ala.

DIESELS IN MUNICIPAL SERVICE

The literature of McIntosh & Seymour Corp., Auburn, N. Y., tells all about the savings effected in municipal power-plants through the use of McIntosh & Seymour diesel engines.

STEEL FENCE POSTS

Strong, durable fence posts made from special high-carbon steel are described in the descriptive folder of the Sweet's Steel Co., Williamsport, Pa., which will be sent on request.

NEW TRUCK MODEL IN 2-, 2½- and 3-TON CAPACITIES

A complete description of the new Relay truck model in 2-, 2½- and 3-ton capacities, the outstanding feature of which is the rear axle of pendulum suspension design which reduces not only the intensity of shocks to the loads but also their number, may be secured from Relay Motors Corp., Lima, Ohio.

VALVE-INSERTING MACHINES

The A. P. Smith Mfg. Co., East Orange, N. J., will gladly send complete information regarding its line of tapping apparatus, tapping sleeves and valves, O'Brien hydrants, lead-melting furnaces, removable plugs, pipe-cutting machine, corporation tapping machines, corporation brass goods and Smith valve-inserting machine, which will take care of valve insertions up to and including 24 inches in diameter.

STREET FLUSHING

Chas. Hvass & Co., Inc., 508 E. 19th St., New York, will be pleased to furnish full information regarding the advisability of installing Hvass flushers in your city to obtain sanitary, economical and efficient street cleaning without interference with vehicular traffic or parking.

CORRUGATED IRON CULVERTS

Complete information regarding Toncan copper mo-lyb-den-um iron culverts, which give long, trouble-free service regardless of soil, atmospheric or other corrosive conditions, and are known for strength and flexibility, may be secured from the Toncan Culvert Mfrs. Assn., Massillon, Ohio.

CALCIUM CHLORIDE FOR DUST LAYING

Solvay calcium chloride is clean, odorless, and harmless to clothing, tires, car finishes and horses' hoofs, and may be applied without expensive equipment by ordinary labor. Complete information regarding its use as a dust layer and surface binder may be secured on request from the Solvay Sales Corp., 40 Rector St., New York.

TRAFFIC CONTROL SYSTEMS

A catalog describing and illustrating Type RD traffic control signals, providing positive control of traffic by using the synchronous, coordinated or progressive systems, will be sent without obligation by the Esseo Mfg. Co., Peoria, Ill.

AN ECONOMICAL STREET SIGN

The Rochester Street Signal Co., 400 Ward Bldg., Rochester, N. Y., offers a four-way porcelain enamel sign in aluminum holder, ready to mount on a 2-inch post, complete in reasonable quantities at a price that will enable cities to erect them on every corner.

SEWERS AND SEWAGE DISPOSAL

The Pacific Flush-Tank Co., 9 Park Pl., New York, publishes nine catalogs on sewage-disposal apparatus, sewer-flushing siphons, sewage pipe joint compound, sewage ejectors, sludge pumps, flush-tank water regulators and Imhoff tanks, any one or all of which may be secured on request by interested officials.

CAST GRANITE LIGHTING STANDARDS

Complete information regarding Marbelite centrifugally cast granite concrete standards for street-lighting installations, may be secured on request from the American Concrete Marbelite Co., 232 E. Erie St., Chicago, Ill.

HIGH-DUTY INTERNAL COMBUSTION ENGINES

Complete data regarding Sterling high-duty internal-combustion engines, which have oil coolers and filters, and water-cooled exhaust manifold, and are completely tested, may be secured on request from the Sterling Engine Co., Dept. C-11, Buffalo, N. Y.

HEAVY-DUTY TRACTORS

The Cleveland Tractor Co., 19326 Euclid Ave., Cleveland, Ohio, will gladly send complete information regarding the new Cletrac 80-60, with maximum eighty and rated sixty horsepower at the drawbar.

IRON AND WIRE FENCES

A copy of the new Fence Specifications issued by the Stewart Iron Works Co., Inc., 502 Stewart Block, Cincinnati, Ohio, describing Stewart iron picket fence and chain-link fence, will be sent to park or playground officials on request.

SEWER- AND PIPE-CLEANING DEVICES

Information and prices regarding Coleman's sewer- and pipe-cleaning devices, including sectional sewer and conduit rods, flexible coil wire sewer and pipe augers with automatic grip handle, and flat steel sewer rods with oval spear points and automatic grip handles, will be sent without obligation by Allen J. Coleman, 208 N. Wabash Ave., Chicago, Ill.

NEW MODEL SWEEPER

Details regarding the new model Elgin sweeper may be secured on request from the Elgin Corp., 501 Fifth Ave., New York, and 100 North LaSalle St., Chicago, Ill.

EXPANSION JOINTS FOR ROADS

W. R. Meadows, Inc., Elgin, Ill., will gladly send to municipal officials interested in the construction of concrete roads complete information regarding the Sealtight perfected expansion joint.

INSTALLING VALVES

Complete details on the proper way to install valves in pipe lines may be secured on request from the Michigan Valve & Foundry Co., Detroit, Mich., manufacturers of valves, sluice-gates and hydrants.

THAWING FROZEN WATER PIPES

The Engesser Electric Mfg. Co., Inc., Watertown, N. Y., will be pleased to send full details of the Engesser pipe-thawing generator set, which is a self-contained unit for mounting on a 1-ton truck and with which two men can thaw 300 feet of ¾-inch service pipe in 3 to 10 minutes or a 100-foot 3-inch pipe in a half-hour to an hour.

CENTRIFUGAL PUMPS

The Engineers of the Morris Machine Works, Baldwinsville, N. Y., will be pleased to consult with municipal officials on water-supply problems or will gladly send a copy of the Bulletin describing Morris centrifugal pumps.

REMOVABLE FIRE-HYDRANTS

A complete description of the Mathews fire-hydrants, in which the entire barrel is removable, so that it can be replaced, the number of nozzles changed, the nozzle direction changed, or the level raised or lowered without excavating, will be sent on request by R. D. Wood & Co., Philadelphia, Pa.

STREET AND TRAFFIC SIGNS

Catalog No. 30 of the Municipal Street Sign Co., Inc., 299 Broadway, New York, describes this company's complete line of street signs, reflecting signs, warning signs and traffic signs.

POWER LAWN-MOWERS

A free copy of "Lawns Beautiful," a catalog describing Jacobsen power mowers and the sickle-bar clipping attachment for removing dandelions, plantain, buckthorn and other troublesome weeds, preventing reseeding, will be sent on request by the Jacobsen Mfg. Co., Dept. AC, Racine, Wis., and 507 West 56th St., New York.

CORRUGATED CULVERTS

Complete information regarding Gohi corrugated culverts, which are made of genuine open hearth iron, pure iron-copper alloy, offering maximum resistance to corrosion, may be secured from the Gohi Culvert Manufacturers, Inc., Newport, Ky.

RECORD WASTED TRUCK TIME

The Service Recorder Co., Cleveland, Ohio, will gladly send complete data regarding Servis recorders and their use by municipal departments in keeping watch on the busy and idle time of their trucks, and will also send a copy of "Experiences of Other Cities."

TREE SURGERY

Data and advice on the care and treatment of trees may be secured on request by interested park, cemetery and street officials from the Davey Tree Expert Co., Inc., 430 City Bank Bldg., Kent, Ohio.

STREET BROOMS AND REFILLS

The Jos. Lay Co., 1900 Wayne Ave., Portland, Ind., will be pleased to send data on its line of street brooms for spring street cleaning, as well as information on its 24-hour service in refilling street sweeper rolls.

TIME—THAT TOUGH OLD TESTER—FINDS A FOE THAT FIGHTS HIM OFF

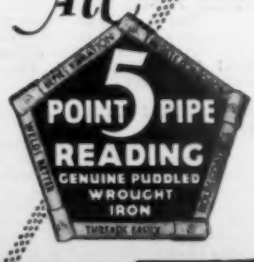
Many generations ago, Time—That Tough Old Tester—began his fight with genuine puddled wrought iron. Against that sturdy metal of which Reading 5-point pipe is made, Time first used his most potent weapon, corrosion.

Year after year after year, Time poured his corrosive mixtures over and through 5-point pipe trying to set in action the destruction which men call rust. But no loop-holes could Time find—filaments of silicious slag barred the way. Only pipe made of genuine puddled wrought iron has proved that it can thus fight off the test of Time—the only conclusive pipe test known.

Make your first cost of pipe the last cost, avoiding damaging leaks, by insisting on Reading genuine puddled wrought iron pipe.

READING IRON COMPANY, Reading, Pennsylvania

For Your Protection This Indented Spiral Forever Marks All



GENUINE PUDDLED WROUGHT IRON
READING PIPE
DIAMETERS RANGING FROM ⅛ TO 20 INCHES

Science and Invention Have Never Found a Satisfactory Substitute for Genuine Puddled Wrought Iron

FENCE FOR PROTECTION

Complete information for those interested in the erection of a Page Copperweld non-resisting wire fence from the first plans to the final erection, may be secured on request from the Page Fence Assn., 520 N. Michigan Ave., Dept. A 1, Chicago, Ill.

REINFORCING ROADS AND STREETS

This is the title of a free booklet which, with the 1929 Procedings of the American Road Builders' Association, will be sent on request to city officials writing to the American Steel & Wire Co., 208 S. La Salle St., Chicago, Ill., and 30 Church St., New York.

CONCRETE HIGHWAYS

The Portland Cement Assn., 33 W. Grand Ave., Chicago, Ill., will gladly send complete information regarding the construction and advantages of concrete streets and highways.

LOWER STREET-LIGHTING COSTS

A booklet describing Hazard Parkway cable, which by eliminating costly conduits, has lowered the cost of street lighting in many American cities, may be secured on request from the Hazard Insulated Wire Works, Wilkes-Barre, Pa.

GOOD ROADS AT LOW COST

The American Tar Products Co., Pittsburgh, Pa., will be pleased to send the Tarmac booklets, describing the use of Tarmac CP for repair of streets, as well as surface treating and the building of new roads with Tarmac.

DEPENDABLE FIRE-HYDRANTS

The Waterous Catalog, issued by the Waterous Co., St. Paul, Minn., describes the removable-head hydrants with protected operating threads, bronze drain, simple freeze-proof construction and positive action made by this company.

MUNICIPAL REFUSE INCINERATION

The Morse Boulger Destructor Co., Inc., 205C E. 42nd St., New York, has prepared a most complete story on the subject of municipal incineration of garbage and rubbish, discussing every phase of the subject, copies of which will be sent on request to officials interested in municipal sanitaton.

EFFICIENT SNOW REMOVAL

Complete data regarding the Nelson snow loader, which has been developed for high-speed snow removal in cities and towns, loading the snow into trucks quickly and at low cost, may be secured from the N. P. Nelson Iron Works, Inc., 822 Bloomfield Ave., Passaic, N. J.

LETTERING GUIDES

A copy of the new Catalog No. 7 which has just been issued by the Wood-Regan Instrument Co., Inc., South Orange, N. J., manufacturers of Wrico lettering guides, will be sent on request.

TAPPING AND DRILLING MACHINES

Details and prices on Mueller water-main tapping machines for tapping and inserting corporation stops under pressure and on Mueller drilling machines, will be sent without obligation by the Mueller Co., Decatur, Ill.

MECHANICAL DISPOSAL OF SEWAGE

Complete information regarding Lincoln disc filters and Reinsch-Wurl screens for the mechanical disposal of sewage and trade wastes and the San-Dis destructor for the disposal of garbage, screenings, sludge and rubbish, may be secured on request from the San-Dis Engineering Corp., 2163 Bailey Ave., Buffalo, N. Y.

VALVES AND HYDRANTS

Automatic pressure control valves, feed-water filters, portable fire-hydrants, hydraulic engines and hydraulic booster pumps are manufactured by the Ross Valve Mfg. Co., Inc., Archibald St., Troy, N. Y., from which complete information and prices may be secured.

FIRE HOSE THAT WEARS

The Bi-Lateral Fire Hose Co., 110 N. Franklin St., Chicago, Ill., will gladly send to interested fire department officials complete information regarding Bi-Lateral fire hose, which will flatten on the apparatus without cracking the rubber lining.

ARMORED PARK CABLE

Data and prices on Condex park cable, which is designed specially for use on series lighting circuits for municipal street lighting, white way or traffic signal installations and park, playground or airport illuminating systems, may be secured without obligation from the Simplex Wire & Cable Co., 201 Devonshire St., Boston, Mass.

RED BRASS WELL SCREENS

The Bulletins of Edward E. Johnson, Inc., 2304 Long Ave., St. Paul, Minn., describe in detail the Johnson screen, which is made of Anaconda red brass, making it corrosion-proof, and which will give more water with less draw down.

MIXED-REFUSE INCINERATORS

City officials interested in the effective and economical disposal of garbage and mixed refuse, should secure complete information on the Heenan system of mixed-refuse incinerators from the Hiler Engineering and Construction Co., Inc., 122 Livingston St., Brooklyn, N. Y.

CHEMICAL SNOW REMOVAL

Full particulars regarding Barnes Snow-melt, which will keep streets clear, regardless of the depth of snowfall, at less than one cent a square yard, may be secured from the Associated Engineering Development Corp., 25 W. 45th St., New York.

HIGHWAY MOWERS

The Rawls Mfg. Co., 202-210 Iowa Ave., Streator, Ill., will gladly send full information regarding the Rawls heavy-duty highway mowers and the new Rawls motor attachment for the Caterpillar Ten tractor.

HYDRANTS, VALVES AND FITTINGS

The Kennedy Valve Mfg. Co., Elmira, N. Y., manufacturers of gate, globe, angle, and check valves for a wide range of sizes and pressures, water-gates and fire-hydrants, will be pleased to send complete data regarding their products to interested municipal officials.

LEAD-LINED PIPE AND FITTINGS

The Lead Lined Iron Pipe Co., Wakefield, Mass., will be pleased to send information regarding Wakefield galvanized amalgamated lead-lined iron pipe and fittings on request.

ROLLING DOORS AND SHUTTERS

A free copy of the new catalog, "Modern Uses for Kinnear Steel Rolling Doors," may be secured on request from the Kinnear Mfg. Co., 1290-1300 Field Ave., Columbus, Ohio, manufacturers of Kinnear steel rolling doors and shutters.

MUNICIPAL CASTINGS

For complete information regarding manhole, catch-basin and sewerage castings of all kinds, city officials should write to Wm. E. Dee Co., 30 N. La Salle St., Chicago, Ill.

STREET SIGNS

Lyle Signs, Inc., Minneapolis, Minn., will gladly send copies of the Lyle Sign Manual to city officials interested in street signs and their installation.

GREASE FOR PUMP PROTECTION

A copy of Bulletin 107-W telling about Dixon's waterproof graphite grease, which will not wash nor melt off and cannot be squeezed out, and which gives double protection for pumps, gears, wire rope and other machinery, will be sent on request by the Joseph Dixon Crucible Co., Jersey City, N. J.

BALLOON TIRES FOR TRUCKS

Data and prices on Goodyear balloon tires for trucks, which have greater air capacity and greater flexibility in side-walls, and protect loads and mechanism against jolts and jars, may be secured on request from the Goodyear Tire & Rubber Co., Akron, Ohio.

FIRE PROTECTION

Facts regarding Fedelcode protection and the Fedelcode fire-alarm system and sirens, which give prompt, unmistakable warning of fire, may be secured without obligation from the Federal Electric Co., 8701 S. State St., Chicago, Illl.

ADMINISTERING OXYGEN

Bulletin No. 401 of Bullard-Davis, Inc., 67 Wall St., New York, and 275 8th St., San Francisco, Calif., describes in detail the Davis inhalator, a device for the administration of either oxygen or oxygen with 5 per cent carbon dioxide, and its use in cases of drowning, gas poisoning or shock.

A NEW DRY CHEMICAL FEEDER

Complete information regarding the Savage-Gauntt dry chemical feeder for feeding any dry chemical in powdered or granulated form, such as alum, lime, soda ash or sulphate of iron, in the treatment of water for municipal or industrial use, may be secured on request from W. J. Savage Co., Knoxville, Tenn.

EXPANSION JOINTS FOR ROADS

Catalog No. 11 of the Servicised Promoulded Products, Inc., 53 W. Jackson Blvd., Chicago, Ill., describes Servicised expansion joints, which are produced from specially refined asphalts, to which fibers are added for elasticity and reinforcement and the joints then are formed hot under pressure to the required shapes.

CURB BOXES

The Reading Meter Repair Co., Reading, Pa., will gladly send information and prices regarding Reading curb boxes, which have no bolts to break off at the root of the thread and will not freeze up, and which save damage suits over injuries from tripping on frost-raised boxes.

NEW 6-CYLINDER TRUCK

An interesting folder describing and illustrating the new Model BC 6-cylinder motor truck, which will take a full pay load over long distances at a sustained speed, has been issued by Mack Trucks, Inc., 25 Broadway, New York.

A NEW HEAVY-DUTY POWER GRADER

A bulletin describing the new Good Roads Dreadnaught power grader, which is built to withstand extreme punishment on new construction or heavy maintenance road work, may be secured from the Good Roads Machinery Co., Kennett Square, Pa.

AN UNCRASHABLE CROSSING GATE

Bulletin No. 750 of the Franklin Railway Supply Co., Inc., 17 E. 42nd St., New York, describes the Highway Guardian, a yielding barrier which will prevent a vehicle from entering a crossing, but without injury to the operator or passengers.

CHLORINATION OF WATER-SUPPLIES

Technical Publication No. 100, published by Wallace & Tiernan Co., Inc., Newark, N. J., is a reprint of an article, "Solution Feed versus Direct Feed Chlorination," by Marshall Wellington, in charge of chlorination control of the New Haven, Conn., Water Department.

COLD PROCESS WATER SOFTENER

The Graver Corp., East Chicago, Ind., has issued Bulletin No. 5079 on the Graver cold process water softener, copies of which it will be pleased to send to interested city officials.

ROAD REPAIR AND MAINTENANCE

Colphalt, a cold process asphalt emulsion which is made from both hard and soft asphalts in slow-coagulating and quick-coagulating solutions for coating new roads or resurfacing and patching old roads, is described in literature which will be sent on request by The Colphalt Co. of Ohio, Cleveland, Ohio.

PROTECTING AIRPORTS FROM FIRE

"Sinister Beacons" is the title of an interesting 16-page booklet published by the American LaFrance & Foamite Corp., Elmira, N. Y., in which are described the various types of airport fires and their control by the use of the proper type of American-LaFrance and Foamite fire-extinguishing equipment.

INSTRUCTIONS FOR USING A LEVEL

The Warren-Knight Co., 136 N. 12th St., Philadelphia, Pa., has issued a 52-page book of instructions on the use of the Sterling convertible wye level, which also contains a list of its engineering equipment and accessories.

PLAYGROUND EUIPMENT

Jawhawk playground equipment, including merry-go-rounds, teeter-totters, swing outfits and the teeter-whirl, are described, with prices, in a folder which may be secured on request from the Wyatt Mfg. Co., Salina, Kans.

STREET AND RUBBISH CANS

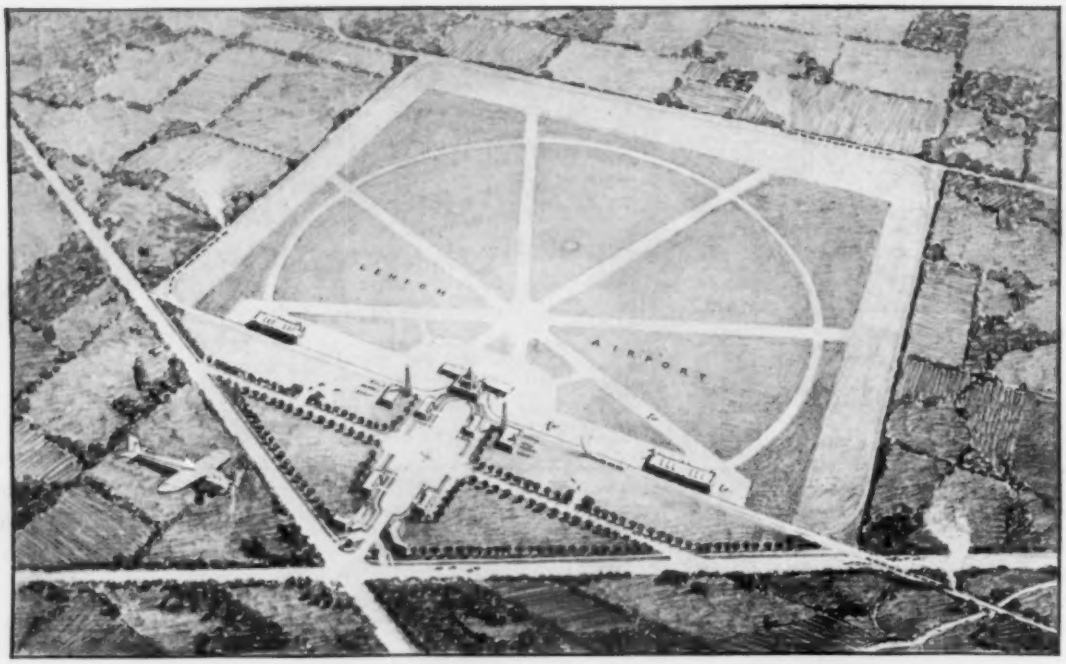
The Galvanized Ware Dept., American Can Co., Toledo, Ohio, will be pleased to send complete information and prices on its complete line of street cans, garbage containers and rubbish burners.

VALVES FOR EVERY PURPOSE

Complete information regarding the Golden-Anderson line of float valves, altitude valves, pressure-regulating valves, check valves and relief valves, may be secured on request from the Golden-Anderson Valve Specialty Co., 1302 Fulton Blvd., Pittsburgh, Pa.

NATATORIUM FILTERS

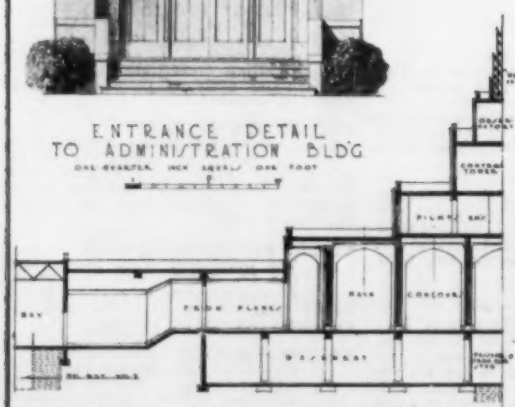
The Norwood Engineering Co., Florence, Mass., has issued a catalog describing the Norwood 3-unit filtration system, which is recommended for keeping public baths and swimming pools wholesome, clean, invigorating and safe at nominal cost.



AIRPLANE VIEW

ENTRANCE DETAIL
TO ADMINISTRATION BLDG

PART ELEVATION OF HANGAR



HALF LONGITUDINAL SECTION

ELEVATION OF ADMINISTRATION BLDG
FROM FORECOURT APPROACH

LEHIGH AIRPORTS COMPETITION

Why not remember to mention THE AMERICAN CITY?

Forecasting the Airport of the near future

Further information on the results of the Lehigh Airports Competition

Undoubtedly, the results of the Lehigh Airports Competition show the most brilliant collection of ideas that have ever been applied to the development of an infant industry. These important, practicable ideas feel their influence from four groups of thought—aeronautical, architectural, engineering and city planning.

From the aeronautical field comes an entire new conception of traffic lanes and taxi strips—smooth, separate lanes for departing and arriving planes and well-arranged taxi strips that keep the main lanes free from planes. Architectural designers suggest for the modern airport of the near future that all-important factor of permanency, reliability and dignity which is characteristic of the great railroad terminals of today. The modern air passenger must have every comfort, convenience and provision for safety.

That serious engineering thought was expended is seen in the suggestion of underground passages, long-span roof structures over loading and unloading docks and the implication of proper guidance in draining and lighting systems. And city planning has shown that the modern airport must be definitely related to the highways and traffic arteries of the community it serves.

A. C. Zimmerman and Wm. H. Harrison won the first prize. Mr. Zimmerman, Los Angeles architect, is a graduate of the University of California, a member of the American Institute of Architects and of the Beaux Arts Institute of Design. He is, at present, architect in charge of development of the Western Air Express terminal at Los Angeles. Mr. Harrison, also of Los Angeles, is a graduate architect of Cornell University and a member of the American Institute of Architects. Cornell awarded him the graduate fellowship in architecture in 1921.

C. Gifford Rich, winner of the second prize award of $2500.00, submitted the design reproduced upon the opposite page. This modern airport design shows the influence of Mr. Rich's varied experiences in architecture and aeronautics. During the war he was a flying officer in the Royal Flying Corps, and his extensive studies into the requirements of the modern airport began with his experience as scout pilot on the more or less primitive landing fields in England and France.

We should be interested in having you write us for detailed information concerning the results of this great competition, and upon request we will send you our brochure—"Highlights of the Lehigh Airports Competition."

Incidentally, the implication of permanence and practicability in all the designs reveals the value of concrete as a fundamental construction material.

THE JURY'S DECISION

FIRST PRIZE: A. C. Zimmerman and Wm. H. Harrison, Los Angeles, Cal. (jointly) $5,000

SECOND PRIZE: C. Gifford Rich, Chicago, Ill. $2,500

THIRD PRIZE: Odd Nansen, East Orange, N. J., and Latham C. Squire, New York City (jointly) $1,000

FOURTH PRIZE: Will Rice Amon, New York City . . $500

Honorable Mention—$100 each

W. Frank Bower, Jr., Henry L. Sandlass, Alfred A. Rothmann, jointly, of East Orange, N. J.
H. Roy Kelley, Los Angeles, Cal.
James S. Nussear, Jr., architect, and William N. S. Pugh, associate, Baltimore, Md.
Edward C. Remson, New York City.
George A. Robbins, Philadelphia, Pa.
Robert Paul Schweikher, Denver, Col.
Fred E. Sloan and Elmer A. Johnston, Chicago, Ill.
Lloyd N. F. Spicer, Bayside, Long Island, N. Y.
Edwin M. Stitt, Pittsburgh, Pa.
Charles A. Stone, U. Floyd Rible, jointly, Los Angeles, Cal.
Robert D. Stott, Howard Hutchinson, Lansing C. Holden, Jr., jointly, New York City.
Virgil Westbrook, San Clemente, Cal.

JURY OF AWARDS

Raymond M. Hood, A. I. A., A. D. P. I. G., Chairman.
Prof. Wm. A. Boring, F. A. I. A., Dean of the School of Architecture, Columbia University.
Parker Morse Hooper, A. I. A., Editor, The Architectural Forum.
Francis Keally, A. I. A.
Colonel Willard Chevalier, C. E., Publishing Director, Engineering News-Record.
George B. Ford, A. I. A., Technical Advisory Corporation, Planning Consultants; Airfield Planner to the War Department.
E. P. Goodrich, Consulting Engineer, City Planning Consultant.
Dr. George W. Lewis, Director of Research, National Advisory Committee for Aeronautics.
Major John Berry, Manager, Cleveland Municipal Airport.
Charles S. Jones, President Curtiss Flying Service.

Lehigh Portland Cement Company
Allentown, Pa. Chicago, Ill.
LEHIGH CEMENT
MILLS FROM COAST TO COAST

The HIGHWAY GUARDIAN-
That Protects the Motorist

IN spite of all that States, Municipalities and Railroads are doing to prevent crossing accidents, motorists continue to crash the gates---to run past warning signals. Cautioning has taught but little. Their safety should be placed in other hands, for motorists have proved they need protection from themselves.

For over two years a new barrier---THE HIGHWAY GUARDIAN---has been thoroughly tested. It has already been raised and lowered 175,000 times, the equivalent of 10 years' service on a railroad operating 50 trains every 24 hours. In every way it has demonstrated its ability to supply the missing requirement. By FORCE it keeps vehicles of all types off the tracks at train time. Heedless motorists, neglecting warnings, hit an automatically operated arm of steel that gradually slows down and stops their machines without damage to passengers or vehicles.

And THE HIGHWAY GUARDIAN does more

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

FEBRUARY, 1930
Vol. XLII, No. 2

The American City

443 Fourth Avenue
New York
50 Cents, $4 a Year

Traffic Ordinances and Street Safety Methods Which Have Proved Effective

An Enforceable and an Enforced Traffic Ordinance

ROCHESTER, N. Y.—It is almost impossible to present any clear statement of all the factors which enable a city of 350,000 persons to keep its accident rate down. However, it is possible to present a few of the many factors which bring about the general result.

First of all, and perhaps the most important, we have an enforceable and an enforced traffic ordinance. We have abandoned the traffic enforcement drives or crusades and keep continuously at traffic enforcement every day—excepting that, of course, we conform consistently with the state and national Brake Testing and Safety Week.

We have an average of 3,000 automobiles tagged every month for minor traffic violations, and the arrests for serious violations average about 400 a month. We place considerable importance upon an unvarying rule that every automobilist who receives a traffic violation card must present it in person at the traffic division office, and every violation and every arrest must stand on its merits. No outside influence—political or otherwise—is allowed to interfere. Rochester has 86 intersections controlled by automatic lights, and at three of the principal intersections in our downtown business section both right and left turns are prohibited at the peak traffic hours.

Contrary to the custom in most cities, local pedestrians cooperate almost 100 per cent in obeying the traffic lights. This is the result of a long period of education and enforcement.

The safety education among school children has been stressed, and frequent talks to children are given by the supervisory officers of the Traffic Division and by other officials of the Department of Public Safety.

An Honor Roll of Lowered Death-Rates from Automobile Accidents

A comparison of the reports issued by the Department of Commerce, covering deaths in 78 large cities during the last three years, shows that only 13 of these cities were able to report a lower death-rate from automobile accidents within the city during the 52 weeks ending December 28, 1929, than for the corresponding 52-weeks periods of both 1927 and 1928. These 13 cities and their automobile accident death-rates per 100,000 population, as reported in the Department of Commerce tables, are:

	52 Weeks Ending		
	Dec. 31 1927	Dec. 29 1928	Dec. 28 1929
Chicago	24.2	26.9	23.8
El Paso	18.6	23.0	15.3
Kansas City, Kans.	7.7	8.5	5.1
Milwaukee	20.2	22.2	18.8
Rochester, N. Y.	14.5	15.0	11.6
St. Louis	16.4	20.5	16.3
San Francisco	21.2	20.3	15.4
Spokane	14.7	17.5	11.9
Springfield, Mass.	9.5	10.7	8.0
Tacoma	20.6	20.0	13.6
Trenton	16.9	13.7	9.4
Washington, D. C.	14.5	14.6	13.8
Wilmington, Del.	26.2	29.7	21.1

As will be seen from the foregoing table, only 3 of these cities—San Francisco, Tacoma and Trenton—report a reduction in their automobile death-rate from 1927 to 1928 and again from 1928 to 1929.

At the request of the editor of this magazine, leading officials of the 3 cities — Rochester, San Francisco and Trenton—have furnished the brief statements here published as to local methods by which motor-vehicle fatalities have been reduced. Another city, Pittsburgh, had shown a reduction in its death-rate from automobile accidents for the 52 weeks ending November 2, 1929, as compared with the two corresponding 52-weeks periods immediately preceding; and because of the exceptionally thorough and intelligent manner in which traffic and safety problems are being studied in Pittsburgh, a more detailed outline of methods used in that city is published immediately following the brief statements from Rochester, San Francisco and Trenton.

Proper credit should be given also to the activities of the local Safety Council. Among these activities is a Safe Driving Contest which continues throughout the year and is participated in by 160 fleets with 1,434 trucks reporting. Prizes are given each month for perfect records, and banners are awarded at the end of the year to the non-accident fleets. Out of the contests there has grown a considerable rivalry on the part of the various truck fleets in striving for these prizes.

Our taxicab situation is controlled by an ordinance separate from the traffic ordinance, which requires the customary licensing of drivers, bonding of owners, etc.; a special check is kept on the drivers of taxicabs, and their licenses are revoked if they are convicted of reckless driving or of any other serious violation of the traffic laws.

We have been fortunate in Rochester in obtaining the cooperation of the Police Court, which has backed the Police Department quite uniformly in its effort to enforce the traffic ordinance. Without the adequate backing of the courts, police officers lose interest in their work, because they feel that it is futile to make arrests which are going to be washed out when the offender appears in court.

At this particular season of the year all the traffic intersections which are protected by traffic lights and all the streets with grades on them are sprinkled with sand and salt to break up the slippery ice coat which is so easily formed during the freezing months.

Although we have been fortunate in obtaining a low accident record, we are not at all content to let the matter stand on its merits and are continuing our efforts to get traffic accidents down to a still lower figure.

STEPHEN B. STORY,
City Manager.

Educating the Public to Traffic Dangers

TRENTON, N. J.—The decrease in the accident death-rate in this city is due largely, I believe, to the fact that the public is becoming year by year more cautious and more alert to the dangers existing on the streets. Both drivers and pedestrians are being educated to realize these dangers by constant safety teachings sponsored by the Police Department, as well as by the thorough manner in which the Police Department enforces all traffic regulations.

It must be remembered, however, that both children and the aged are ever in danger of being injured by automobiles; these two groups comprised 80 per cent of the number of persons fatally injured in this city during the past five years. Nothing can reduce the number of deaths of children and the aged, in my opinion, except the utmost caution on the part of every motorist.

For the past nine years the Police Department of Trenton has maintained a School Safety Patrol, in charge of a Police Sergeant, John L. McBride. This department has particular charge of the safety of school children. Streets in the vicinity of the various schools which are not equipped with sufficient playground facilities are roped off for certain periods of the day in order to provide safe places in which the children may play. During the winter season various streets are closed so that children may enjoy sledding in safety. The School Safety Patrol work is very effectively carried out in the various schools of the city, where safety is taught the children under the guidance of the Police Department and the whole-hearted cooperation of the school authorities.

Safety messages are broadcast over Station WOAX, Trenton, N. J., at 7.45 p.m., every Wednesday evening during the school season. These programs are made up by the Sergeant in charge of the School Safety Patrol, and the subject is appropriate to the season of the year. Each schoolboy Patrol Captain takes part in these programs by relating facts about his school that should be given special attention by autoists using the streets in the vicinity of the school. He also has a message for the children of his school and for the parents. Announcement is made in each school that the Captain is to talk over the radio.

The School Safety Patrol also has a booth at all public expositions held in the city of Trenton. Safety literature and safety motion pictures are exhibited, as well as accident records of the city. Thousands of motorists and pedestrians are thereby taught the seriousness of accidents and the means of preventing them.

The Police Department has not conducted any special campaign for safety, but all members of the Department strictly enforce at all times the provisions of the State Traffic Act, Motor Vehicle Act, and City Traffic Regulations. The State Traffic Act, which became effective September 5, 1928, provides in part for the erection of "Stop" signs on all streets intersecting highways upon which trolley cars are operated. In conformity with this act, a total of 370 such "Stop" signs were erected during the month of June, 1929. The provisions of the particular clause of the State Traffic Act relating to these signs have been rigidly enforced. Brakes and lights on automobiles are periodically inspected by the Police Department.

Whenever an accident occurs in the city of Trenton, whether it is fatal or merely involves property damage, all the principals and witnesses are summoned before the Police Judge to explain the circumstances. If the Judge finds there has been any infraction of the State Traffic Act, Motor Vehicle Act, or City Traffic Regulations, the proper punishment is imposed.

JAMES KELLY,
Supervisor of Traffic Bureau, Trenton Police Department.

Automobile Fatalities Reduced by a Highly Organized Community Effort

SAN FRANCISCO, CALIF.—Seventy-nine human lives have been saved in San Francisco during the two years ending December 31, 1929, compared to the number of persons who would have perished had the rate of automobile fatalities which prevailed during the year 1927 continued unchecked. This is a reduction of 25 per cet. The number of automobile fatalities for the past three years, according to the Coroner's records, were as follows: for 1927, 156; for 1928, 129; for 1929, 104. It should be remembered that this significant improvement has taken place notwithstanding the increased number of potential hazards due to a growing population and a growing per capita automobile ownership.

How was this improvement accomplished? To answer this question in one sentence, I would say that it has been the result of a highly organized community effort extending over a period of three years and involving cooperation on the part of city authorities, business and civic organizations, the organized motoring public, the press, the radio stations, the street-car companies and many other public and private agencies. The movement was started early in 1926 through the appointment, by the Mayor, of a citizens' committee known as the San Francisco Traffic Survey Committee, which was charged with the duty of evolving a plan for the elimination of streeet traffic congestion and hazards in San Francisco. Early in its consideration of the problem of street traffic, the Committee realized that modern traffic control is a highly complex and technical matter. It ordered an extensive engineering survey under the direction of Miller McClintock, of the Erskine Bureau of Harvard University. Following a year's study, a report on the street traffic control problem of San Francisco was issued by the Committee, containing comprehensive engineering facts and full recommendations for measures of relief of congestion and hazards.

Shortly after the organization of the Traffic Survey Committee, an enforcement board was organized known as the San Francisco Traffic Law Enforcement Board. The membership of this Board included all of the city authorities having responsibility over various phases of traffic administration and law enforcement, as well as representatives of the California State Automobile Association, the five metropolitan daily newspapers and the San Francisco Traffic Survey Committee. These two organizations have worked hand in hand and in cooperation with many interested groups toward bringing about traffic betterment. One of the most important recommendations made by Dr. McClintock was in the form of a text of a model traffic ordinance. This ordinance was enacted almost immediately after the issuance of the report. It involved the installation of large numbers of new traffic signs, direction markings, stop and go signals, and other traffic devices.

INCREASED APPROPRIATIONS FOR TRAFFIC CONTROL IMPROVEMENTS

Representations were made to the City Government of the need for largely increased appropriations for traffic control improvements, and a total of $350,000 has been appropriated in the city budgets for this purpose during the past two years. This is an increase of over $250,000 compared with the amounts theretofore appriated in any similar period.

The McClintock report recommended the establishment of a Division of Street Traffic Engineering as a regular function of municipal administration. This office has been established and is rendering engineering service to all city departments having responsibilities relating to street traffic. The report recommended the establishment of a Traffic Fines Bureau to handle all cases of minor traffic violations and relieve the police courts of a vast amount of detail and at the same time give a greater certainty of punishment for violators of the traffic laws. This Bureau was established in the latter part of 1927, and up to December 31, 1929, it had successfully handled 122,710 cases of minor violations.

The report recommended a 33 per cent increase in the personnel of the Police Department Traffic Bureau. This was also accomplished.

A system of pedestrian control whereby pedestrians are required to follow traffic stop and go signals was instituted, and this worked out very satisfactorily.

The traffic control devices installed in order to make the new ordinance effective, included the following:

Hundreds of street car loading zones protected by raised buttons with modern headlight reflectors.

Hundreds of pedestrian crosswalks previously unprotected now permanently marked.

Paint-marked traffic lanes established to keep traffic in better alignment at congested points.

"Slow" signs painted on the pavement at numerous hazardous places.

"No stopping," or clearance, zones established by curb markings at all busy corners and certain congested places.

Safety islands for pedestrian refuge points and better channelization established at a number of intersections where formerly there existed excessively large open spaces of paved roadway and very long unprotected crosswalks.

A system of arterial or protected streets established to facilitate traffic flow on principal outlying arteries.

A comprehensive and fully flexible system of electrical signal timing control, controlling all stop and go signals from a central station established, and the "flexible progressive" system of signal timing made effective.

Space permits mention of only a few of the hundreds of physical things that have been done to reduce traffic hazards.

ACTIVITIES OF TRAFFIC LAW ENFORCEMENT BOARD

Under the sponsorship of the Traffic Law Enforcement Board, several intensive traffic safety campaigns have been conducted, and in these campaigns the newspapers, radio stations and street-railway systems have been of invaluable service in disseminating to the public knowledge of specific traffic dangers and of the rules of the road, and, in general, making the people of San Francisco more thoroughly traffic-minded. The Police Department and the police judges have worked in cooperation with this traffic movement toward a more intensive system of apprehension and punishment of violators of the more important provisions of the state law and traffic ordinance relating to safety.

To sum up, the community has been highly organized for one specific purpose. All responsible and best-informed representatives have been brought into cooperation. The traffic problem has been recognized as a complex one requiring engineering study and advice. It has been recognized as an important problem in human relationships. City authorities, business, commercial and civic interests, the motoring interests, the press, the radio stations and other avenues of publicity have all been welded into a definite community movement for better traffic conditions. The movement has not been specifically to cut down traffic deaths; it has aimed rather toward the relief and ultimate solution of the traffic problem itself.

RALPH W. ROBINSON,
Executive Secretary, San Francisco Traffic Survey Committee.

Traffic Accident Problem Receives Continuous, Scientific Study in Pittsburgh

A Summary of Recent Activities and Future Plans for Safety Work

By BURTON W. MARSH
TRAFFIC ENGINEER
and
CORNELIUS J. LYONS
TRAFFIC ACCIDENT ANALYST, BUREAU OF TRAFFIC PLANNING, DEPARTMENT OF PUBLIC SAFETY
CITY OF PITTSBURGH

PITTSBURGH is happy to be one of the six cities which, according to the Department of Commerce reports, has shown a lower death-rate from traffic accidents within the city for the 52 weeks ending November 2, 1929, as compared with the previous two years. At the same time, we cannot feel too proud, because we have had some bad months during 1929, so that our total number of fatal accidents exceeds the excellent record we made in 1928.

However, we know that results are being accomplished by the intensive accident reduction work which is being done.

Basically, the reason that results in accident prevention are being secured is that Pittsburgh has aggressively tackled its traffic accident problem. The results are due to the combined, continuous, enthusiastic efforts of several organizations active in accident prevention work, including:

1. The Better Traffic Committee.—An advisory group of 30 citizens and city officials appointed by the Mayor, and to a very great extent responsible for the traffic improvement work which has been carried on in Pittsburgh. The Committee, through its engineering, laws and enforcement, traffic flow subcommittees, and especially through its very active educational subcommittee, has done much toward reducing accidents in Pittsburgh. Some of the main accomplishments are classified below.

2. Bureau of Traffic Planning.—This is the city's traffic engineering organization. Pittsburgh was the first city in the country to have a municipal traffic engineer. This bureau, through its scientific attack of the traffic problem, and through the considerable educational work which it has done, has played an important part in accident prevention work.

3. Traffic Division.—This city has a separate traffic division in the Bureau of Police. Members of this division are specialists in traffic work, and are thus able to deal with problems more intelligently and to aid more effectively in accident prevention work than if there were no specialized traffic division.

4. Traffic Court.—All traffic cases are heard at the Traffic Court. This enables more intelligent and effective handling of such cases. The work of the Court concerns many persons involved in accidents and permits of more intelligently instructing such persons about ways to avoid accidents and bringing the accident hazards more emphatically to their minds than if traffic cases were held in non-specialized courts.

Engineering Work Which Has Especially Helped in Accident Prevention

1. Scientific Approach to Traffic Problems—Including Various Accident Problems.—It is believed that the scientific approach to problems is fundamentally sound, and is the approach that will yield best results in accident prevention and in dealing with other traffic problems.

2. Traffic Accident Analyst.—Some months ago, a man who is to become a specialist in accident prevention work was added to the Bureau staff. This man's full time is devoted to accident work. While some results have already been obtained, the major effect of this work will be felt in the future. Some of the lines of work being carried on by this specialist are listed below under "Future Plans."

3. Flexible Progressive Signal Systems.—Pittsburgh has two flexible progressive signal systems and is adding several more. There is no doubt that the coordinated movement at controlled speeds which results in such systems and the sureness of right-of-way so clearly designated by our effective signals, have prevented many accidents. Records show this to be the case. These systems also embody a special cycle for the protection of pedestrians; and this cycle will soon be in use at every signalized intersection in the city. Briefly, this cycle informs pedestrians at the instant when it is no longer safe for them to start to cross the street. After that instant, sufficient time for pedestrians who have already started to cross, is given to reach the opposite sidewalk. At the same time, the cycle permits vehicles to continue to move as long as possible before cross traffic starts. This cycle certainly has prevented traffic accidents. These signal systems were installed only after thorough traffic surveys.

4. Outlying Signals.—There are many outlying signals which have, in general, reduced accidents. Generally, signals are located only after careful study of where they are warranted and where they will accomplish the most good. Short cycles are used, so that most drivers are willing to wait for their signal and do not move on the red light (which would of course be a serious accident hazard). Several vehicle-actuated units are in use, and these further tend to reduce unnecessary waiting and the accompanying possibility of hazardous violations by moving on the red light.

5. Traffic Counts.—Each year, a city-wide traffic count has been taken—the 1929 count involving over 1,000 Boy Scouts and supervisors. The records obtained are very helpful in showing what main arteries should have special protective equipment and regulations, in deciding upon intersections which should be signalized, logical through "Stop" streets, special safety "Stop" intersections, and other measures for facilitating and protecting traffic movement.

6. Accident Spot Maps.—Accident spot maps have been made which have been very helpful in locating "sore spots"

—where numbers of accidents are found to be grouped. These locations have then been studied in detail, and protective measures devised and put into effect.

7. Effective Maintenance of Traffic Equipment.—Traffic control signals, warning signs, headlight reflector warning devices, etc., have been maintained at a high degree of effectiveness—and this work is no small aid in accident prevention.

Educational Work Which Has Especially Helped in Accident Prevention

There is no doubt that the continuous, coordinated educational program which has been carried on by various agencies has played a major part in accident prevention. Numerous agencies have cooperated, including the Better Traffic Committee, through its Educational Subcommittee, the local Safety Council, the Bureau of Traffic Planning, school authorities, local railways company, taxicab companies. Some of the main projects may be of interest:

Main Educational Projects of the Better Traffic Committee

1. Traffic Essay Contests.—This is now a yearly contest conducted in both public and parochial schools. There are 100 money prizes, totaling $810, and three $150 college scholarships. In 1927, 55,000 essays were written; in 1928, 60,000. This year, 67,000 essays were prepared. It is not only the direct education of the children, but indirect "by-products," including the education of parents through questioning and the concentration of interest of officials, which cause the committee to believe these contests are its most effective work!

2. Traffic Officer-Speaker.—A genial traffic officer carries on a continuous speaking program at schools, and during the summer at playgrounds. "Uncle Bill" is beloved by the children, and his work is surely bringing results in accident prevention.

3. Distribution of Printed Material.—The most important project under this heading was the distribution of 38 different "Traffic Talks," 150,000 of each being distributed through department stores, motor clubs, Chamber of Commerce, gas filling stations, and especially through schools.

4. Pedestrians' Rights and Duties.—The Committee has conducted a special "Pedestrian Week," issued posters, and used billboards, and various other publicity media to cope with the pedestrian phase of the traffic problem—realizing that approximately two-thirds of the persons killed in traffic are pedestrians, and that there is a marked lack of understanding by pedestrians and drivers of their respective rights and duties in traffic.

That the educational work of this Committee is well thought of by City Council is indicated by the fact that Council has appropriated each year for this Committee's work, beginning with $5,000 and increasing to $17,500 in 1929.

Some Bureau of Traffic Planning Educational Activities

1. Yearly issuance of route guides, brief annotations of the state vehicle code, and folder giving one-way streets and parking regulations.
2. Issuance of cards for officers to distribute concerning obedience to signal lights, safety in crossing streets, etc.
3. Preparation of accident spot map, widely distributed by the Better Traffic Committee.

Some Safety Council Educational Projects

1. Junior Safety Patrols
2. Safe Drivers Schools
3. Safe Drivers Contests for Women
4. Interfleet safety contest
5. Yearly "Thanksgiving—No Accident Month"—with considerable cooperation from the Better Traffic Committee.

Some of the Educational Projects of School Authorities

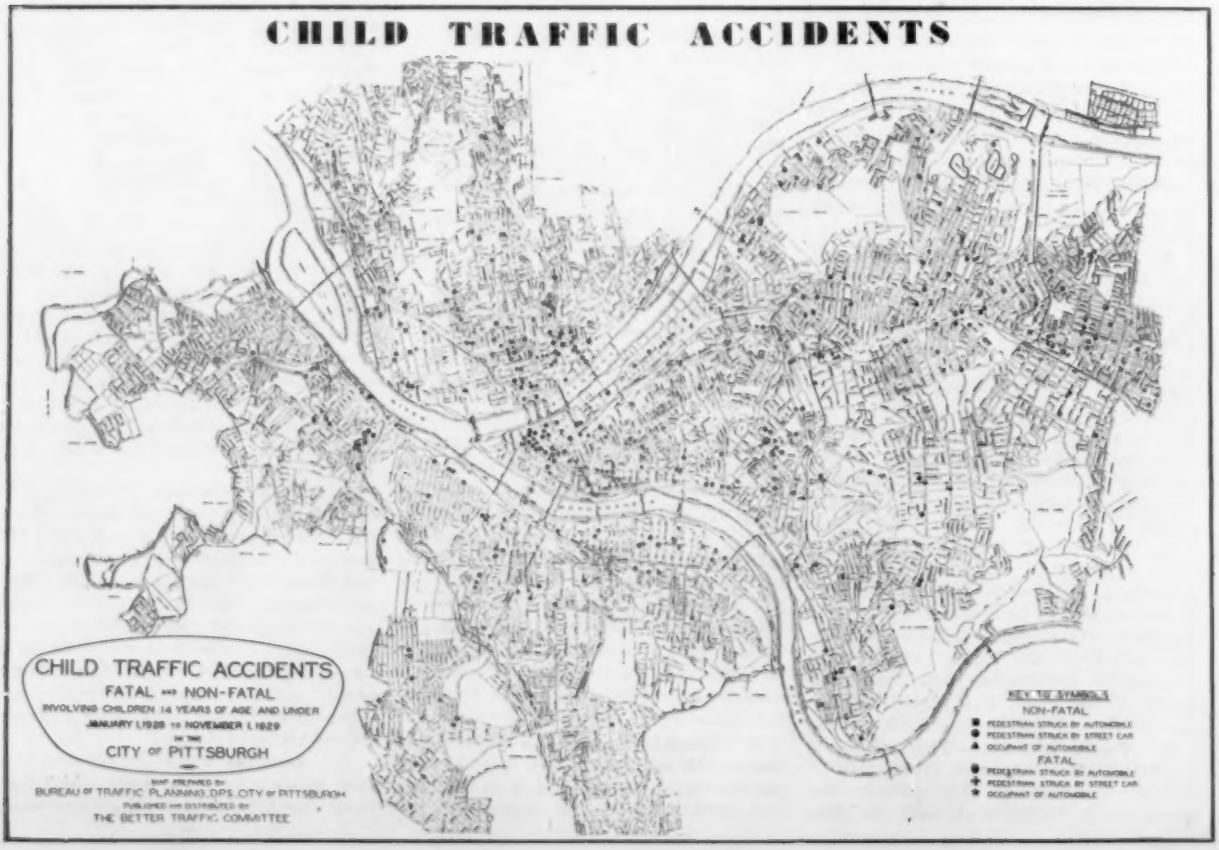
1. School Safety Committee
2. Special activity for Junior Safety Patrol
3. Special poster work
4. Full cooperation in the essay contest and in the work of the traffic officer-speaker.

Some of the Educational Projects of the Railways Company

1. Posters in street cars
2. Assistance in traffic counts
3. General cooperation in all worthwhile safety projects.

New Safety Work, Now Under Way, or Planned for the Immediate Future

The above summarized outline is not by any means complete, but does cover some of the most effective and some of the more unusual methods used in acci-



dent prevention work in Pittsburgh. It may be interesting to cite a few of the lines of work which are now going on, or are definitely planned for the immediate future—but which could not be said to have had any effect upon the record concerning which this article was written. A brief list of some of the most important of these items follows:

1. *Six arteries* have been selected as the first of a system of through traffic streets. Unique and very effective new flashing Neon "Stop" signs will be placed in operation on these streets within the next month. These conform to the American Engineering Council's standard "code" for street traffic signs, signals, and markings.

2. *Coordination of signals* on main routes and through traffic streets, with the purpose of attracting inter-district and through traffic to logical major routes and off adjoining residence streets where the hazard to children is especially great. Signals already existing on major routes are being coordinated and some additional signals are being installed so that there may be more effective control of progressive movement on these arteries. On through traffic streets, installation of coordinated signals at spaced intersections is especially necessary to control speed; to permit vehicles to cross at these key points; and to bring about (partially at least) group movement so that at other intersections vehicles will find spaces in the traffic flow on the main artery in which they can enter or cross the artery. These signals are also necessary for protection of pedestrians.

3. *A Codified Traffic Ordinance*, patterned closely after the Hoover Model Ordinance, has been presented to City Council.

4. *A Child Accident Spot Map** has recently been completed by the Accident Analyst. This locates child accidents for practically the past two years, and classifies them under several headings. It will be distributed to all schools and to other groups. In the schools it is planned to have these maps posted and kept up to date by monthly reports.

5. *The Accident Analyst* has planned studies to show the effect as to accidents, of the new through traffic streets, of the installation of various traffic control signals, and of various types of warning signals, reflectors, and other traffic equipment. This work will be exceedingly valuable in that it will show what types of equipment are most effective for various conditions.

6. A survey is planned to develop methods of protecting school children around the schools and playgrounds. This problem has been brought emphatically to the attention of the city authorities by a large number of letters, petitions, and personal requests for traffic officers, traffic signals, crosswalks, and other means for school-child protection.

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* EDITORIAL NOTE.—This map is printed in black with symbols in red, and measures 42 inches by 30 inches. It can be secured without charge on application to the Bureau of Traffic Planning, Pittsburgh, Pa.

The Freeway—A New Kind of Thoroughfare

By EDWARD M. BASSETT
PRESIDENT, NATIONAL CONFERENCE ON CITY PLANNING

EVERY one knows that new streets and highways that are intended to increase through vehicular capacity gradually become cluttered up at spots so as to make a limitation. This is caused by increase of cross streets, private driveways, new garages, gasoline stations, business places and parked automobiles. As traffic becomes more intense, the obstacles increase, with the result that the highway intended to accommodate a fast traffic flow is slowed down to much less than its original capacity. Even if important grade crossings are eliminated, the driveways, gasoline stations, garages, stores and parked cars cause a great limitation.

A *parkway* allows a freer flow of traffic, because side streets and private driveways cannot enter it, and gasoline stations, garages and stores cannot front upon it. The abutting owner has no right of light, air and access over the parkway. To make this clear, one should think of a parkway as an elongated park. It is well known that the authorities can erect a fence or wall around a park, leaving appropriate *public* entrances. A parkway, however, is not for general use. As it is an elongated park, it must be used for recreational purposes, and consequently traffic is limited to pleasure vehicles.

We are more and more feeling the need of a new kind of thoroughfare—one which will be like a highway for both pleasure and business vehicles, but which will be like a parkway in preventing the cluttering-up of its edges. We have no name for such a thoroughfare. No law in this country provides for such a novel trafficway. If a name could be given to this new sort of thoroughfare, it would immediately enter into the practice as well as the terminology of city planning. I suggest the name of *freeway*. This word is short and good Anglo-Saxon. It connotes freedom from grade intersections and from private entrance ways, stores and factories. It will have no sidewalks and will be free from pedestrians. In general, it will allow a free flow of vehicular traffic. It can be adapted to the intensive parts of great cities for the uninterrupted passage of vast numbers of vehicles.

Here are definitions of the three kinds of thoroughfares:

A highway (or street) is a strip of public land, dedicated to movement, over which abutting owners have the right of light, air and access.

A freeway is a strip of public land, dedicated to movement, over which the abutting owners have no right of light, air or access.

A parkway is a strip of public land, dedicated to recreation, over which the abutting owners have no right of light, air or access.

Practical Operation of Housing Enterprises Receives Organized Attention

DELEGATES from Boston, Chicago, Cincinnati, New York, Philadelphia and Pittsburgh attended the second annual conference of the National Council on Housing Practice at the Pennsylvania Hotel, New York, December 16-17.

It was unanimously decided to continue the organization for the purpose of collecting, interpreting, comparing and disseminating information revealed in the actual operation of limited-dividend and other housing enterprises.

Committees reported on their research into such phases of housing as design, operating problems, accounting methods and social activities. Some very interesting and informative discussions were held. Guest speakers were Lawrence Veiller, of the National Housing Association, and Aaron Rabinowitz, of the State Housing Board. A special feature of the conference was a motor trip on invitation of the City Housing Corporation to view the development at Radburn, N. J.

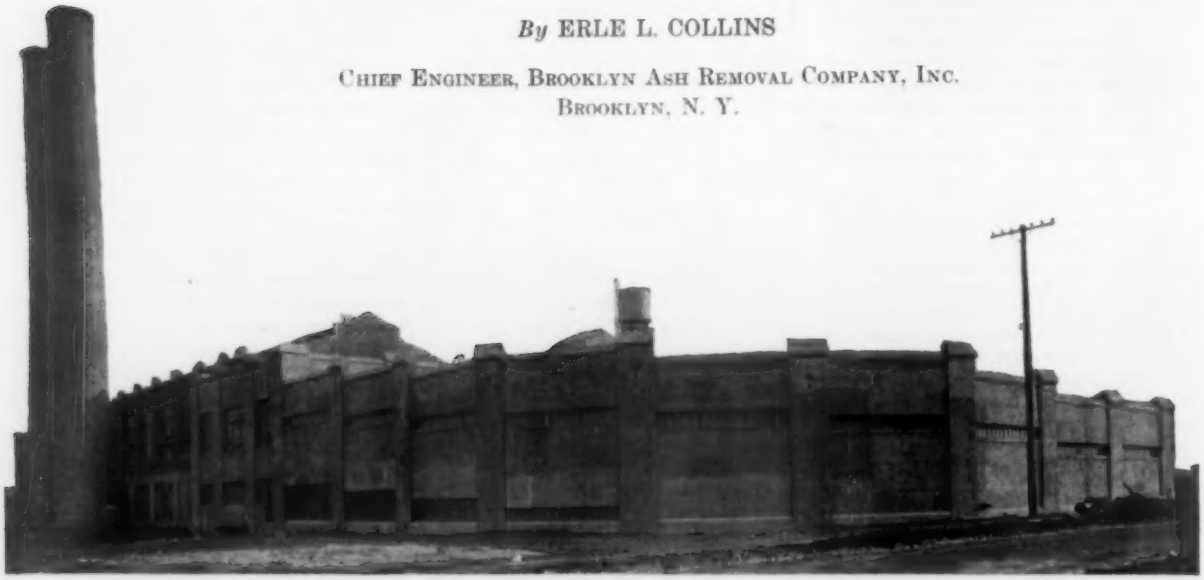
The present membership consists of representatives from the following Housing Companies: Amalgamated Housing Corporation, New York; Brooklyn Garden Apartments; Charlesbank Homes, Boston; Cincinnati Model Homes Co.; City Housing Corporation, New York; City and Suburban Homes Co., New York; Fairfield Apartments, Birmingham, Ala.; Julius Rosenwald Apartments, Chicago; Lavanburg Foundation, New York; Marshall Field Apartments, Chicago; Octavia Hill Association, Philadelphia; Open Stair Dwellings, New York; Paul Lawrence Dunbar Apartments, New York; Phipps Houses, New York; Westinghouse Air Brake Home Building Co., Pittsburgh; also representatives from various housing associations and the State Housing Board of New York.

Clarence H. Holmes, President of City and Suburban Homes Co., was re-elected President of the Council, and Ernest Schofield, of Phipps Houses, was re-elected Secretary-Treasurer. The Council will gladly consider applications for membership, addressed to Mr. Schofield, at 331 East 31st Street, New York.

Three New 500-Ton Incinerators Added to Brooklyn Disposal System

By ERLE L. COLLINS

CHIEF ENGINEER, BROOKLYN ASH REMOVAL COMPANY, INC.
BROOKLYN, N. Y.



EXTERIOR OF THE NEW HEENAN INCINERATOR AT GREENPOINT

ON April 1, 1928, the city of New York, through the Department of Street Cleaning, entered into a five-year contract with the Brooklyn Ash Removal Co., Inc., for the final disposition of garbage, ashes and rubbish in the borough of Brooklyn.

The population served is about 2,500,000 and the quantity of material to be disposed of under the contract will exceed an average of 6,000,000 cubic yards per year, of which about 3,000,000 cubic yards will be rubbish, 2,000,000 cubic yards ashes, and 1,000,000 cubic yards garbage. Under the terms of this contract, the company was required, in addition to operating fourteen plants located in various sections of the borough, to design and construct three garbage and rubbish incinerator plants in the three sections of the borough known as: (1) South Brooklyn, on Gowanus Canal; (2) Greenpoint, on Newtown Creek; (3) Paerdegat Basin, inland.

Each of these three new plants has a furnace capacity of 500 tons of garbage and rubbish in 24 hours and is equipped with rubbish-salvaging units capable of handling about 3,000 cubic yards in a 10-hour day. Ashes are not received at these incinerators. Two of the plants were located on waterfront sites, requiring the use of pile foundations. These waterfront locations also made possible the use of ash dumping boards for loading directly on scows. The third plant was located inland, where adequate soil conditions obtained so that spread foundations were used to advantage.

Routing of Collected Material

Garbage, rubbish and ashes are collected separately in Brooklyn. Practically all collection equipment is motor-driven. These plants are designed to handle rubbish and garbage separately. All materials are brought into the plants over the scales and up ramp A. The garbage is dumped into the receiving bin C, from the tipping floor B, the empty trucks passing out of the building and following around platform Y and thence out of the plant down ramp A. Ash trucks travel around platform X to the ash board S, where they are dumped on to deck scows, the empty ash trucks continuing around platform Y and thence out of the plant down ramp A. The rubbish trucks travel around platforms X and Y and discharge into rubbish bins F and F-1, located at each end of the plant. The empty rubbish trucks travel along platform Y, and so out of the plant down ramp A.

The rubbish is conveyed by picking-belts G and G-1, and reclaimable materials are removed and sorted. Various grades of paper and rags are baled in presses P and P-1. Tin cans are baled in presses K and K-1. The tailings or unreclaimed rubbish is discharged at each end of the receiving bin C, where it is mixed with the garbage as fuel and fed into the furnaces E by means of traveling cranes and grab buckets D and D-1.

Disposal of Incinerator Clinker

The residual ash from the furnaces is dropped from ash hoppers under the furnaces into an ash sluiceway located under the furnaces and running the entire length of the building, and is flushed by means of high-pressure nozzles into ash sump R on the dock, from which it is transferred to a scow by means of derrick T equipped with a clamshell bucket.

The loaded scows are towed to Corona, L. I., where the ashes and residue are used to fill in meadow land.

A superintendent's office is located on the tipping floor level at the top of ramp A. Storeroom, toilet and locker rooms are on the mezzanine floor adjacent to each salvage unit.

Special Conditions at Paerdegat Basin Plant

The Paerdegat Basin plant had to be adapted to a rectangular-shaped piece of property, necessitating the placing of the two salvage units directly alongside the flue room instead of at each end of the furnace room, as in other plants.

This also required the separation of the chimneys and the placing of one at each end of the building.

Equipment

The contracts for the construction of the furnaces, including all appurtenances and equipment for the three plants, were awarded, after competitive bidding, to the Hiler Engineering and Construction Co., of Brooklyn, N. Y.

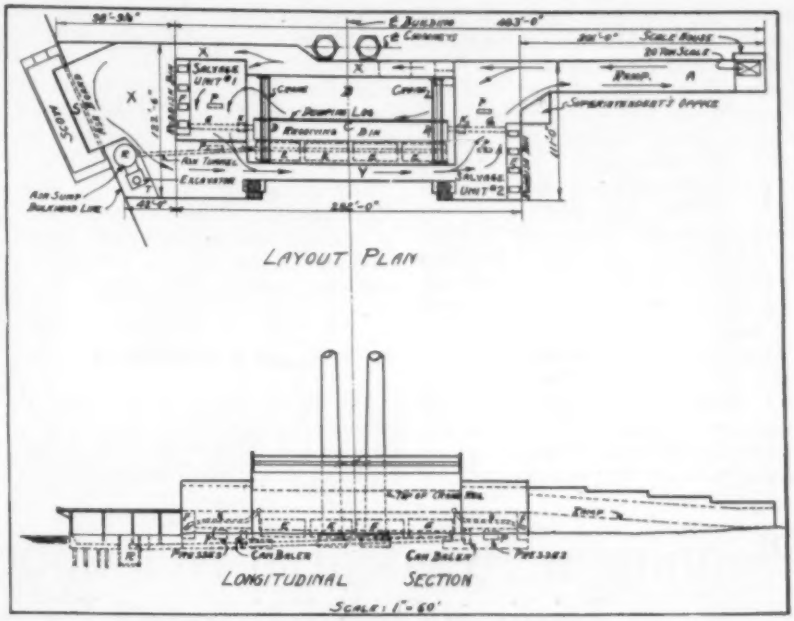
Each plant consists of four 4-cell Heenan furnaces, each having its individual flues, fan and air preheater, the entire flue system combining in a connecting flue leading to two main flues leading to two chimneys.

As outlined above, the materials to be burned are discharged from the collection vehicles on the charging floor into a receiving pit of ample dimensions extending the full length of the building and located immediately in the rear of the battery of furnaces on the floor below.

Two traveling cranes equipped with grab buckets form the charging equipment by means of which the materials are raised from the pit and conveyed to the charging containers, which are arranged alongside and parallel to the pit, and discharge their loads directly into these containers. These containers are square steel boxes extending downward from the floor with their tops set at a level with the floor. They are constructed in pairs with the adjacent sides widened to meet in an enlarged mouth, so that each pair form a hopper-shaped receiver having vertical sides.

The charging device includes these containers and a mechanically operated removable cover over the charging holes of each furnace with an attached feeding chute or guide for controlling the flow from containers to furnace. Steel plates attached to these devices above the covers form the bottoms of the containers so that as the covers of the charging holes are removed, the bottom of the containers is opened and at the same time the chutes are set so that as the materials flow into the furnace, spillage is prevented and the materials fall upon the furnace grates without causing erosion of the brickwork surrounding the charging openings or of the interior walls of the furnace.

The covers, guides and plates travel on wheels running on tracks and are moved to and from place by means of pneumatic rams actuated by compressed air and controlled by valves operated by the stokers on the floor below by means of chain pulls. Thus charges are delivered to the furnace only as and when the stoker finds it necessary. This stoker control is a very important feature of proper charging.



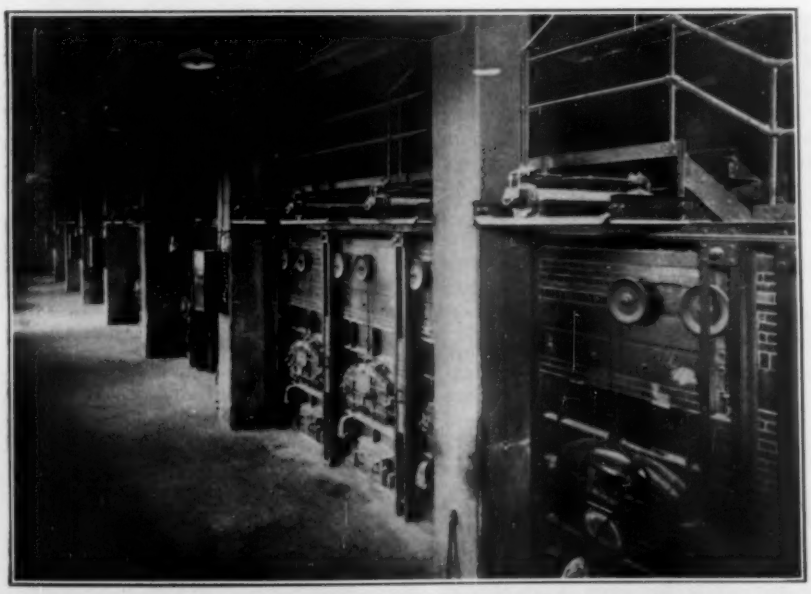
TYPICAL LAYOUT OF EACH OF THE THREE NEW INCINERATORS

Grates and Forced Draft

The grates of the four cells of each furnace are continuous as in all Heenan designs, but in these plants they are arranged so that the residue falls into the ash pits and no part is removed to the outside on the stoking-floor level; thus the dust nuisance which usually attends the removal of ashes is eliminated. This design embodies fixed grates of the standard Heenan pattern for the rear section of the grate area. The front portion is fitted with dumping sections which drop down at the front when actuated by means of a lever operated by the stoker, and form an ample opening through which the residue is caused to fall.

Air to support combustion is furnished by means of specially designed fans or blowers having ample capacity as to volume and pressure while at the same time assisting in the ventilation of the building.

This air is then blown into and through tubular cast iron preheaters of special design wherein the air which passes between and around the tubes is heated to the required temperature by the transmission of heat from the hot gases from the combustion chamber bypassed from the flue and flowing downward through the tubes and thence to the chimney. The air is blown through metal ducts into a manifold air duct located at the rear of each furnace, from which it is valved as required into the



THE STOKING ROOM AT THE GREENPOINT INCINERATOR, SHOWING THE STOKING AISLE AND A BATTERY OF FURNACES

several ash pits, each having its independent inlet, and so through the grates.

Compressed air to actuate the pneumatic rams of the charging device is furnished by two air compressors of standard design equipped with storage tanks and valve control. These compressors have automatic stop and start control so that their operation is rendered economical. The power to operate the fans and compressor is furnished by electric service to the plant, and each piece of equipment has a standard electric motor.

Flow of the gases from the furnaces to the chimney is regulated and controlled by a system of dampers which not only modify as to volume and velocity, but divert through the preheaters or, if necessary, isolate the preheaters without interruption of operation. This particular feature is too often overlooked or disregarded, although it is one of the most essential features and worthy of the closest study and, as in these plants, gives entire satisfaction because of the care used in designing at the outset.

The use of two chimneys in these plants permits of the operation of three of the four furnaces by means of one chimney in case of any interference with the operation of the other.

Results of Official Tests

The official tests of the furnaces and equipment consisted of a five-day preliminary test followed by a six-day official test during which period the furnaces were required to burn not less than 500 tons of a mixture of 75 per cent garbage and 25 per cent rubbish by weight in each 24-hour period. The plants actually burned 545 tons per day. During the six-day test, one period of eight hours was taken during which time precise measurements and observations were made of the entire operation, and it was found from this test that the furnaces were capable of burning at the rate of 671 tons per 24 hours.

No salvaging operations were conducted during the test periods. The average temperature of the combustion chamber gases during the entire six-day test was about 1820° F. The average temperature of the chimney gases was about 800° F., and of the preheated air 510° F.

Planning a Residential Neighborhood for Better Living Conditions at Lower Cost

By

CHARLES B. BENNETT

City Planning Engineer
Milwaukee, Wis.

SECTION A

VIEW DOWN CENTER OF A TYPICAL BLOCK

SECTION C

VIEW OF A TYPICAL BUSINESS ST[illegible]

SECTION B

VIEW DOWN A PARKWAY

THREE RELIEF DRAWINGS PREPARED TO SHOW DETAILS OF LAND DEVELOPMENT AT SECTIONS A, B, AND C, ON THE PLAN

HOW to provide better living conditions for the home owner at lower cost is a problem with which the Board of Public Land Commissioners of Milwaukee is much concerned. In quest of an answer, a careful study was made of a typical outlying one-quarter section of land platted and improved in conformity with present standards for residential neighborhoods. The only lands dedicated for public use were the customary 60-foot streets 260 feet apart, with intersecting streets 600 feet apart and 18-foot alleys running through the center of the blocks. These dedications comprise 29.30 per cent of the total area of the quarter-section, and while park, playground, and school sites are a necessary part of residential requirements, none were dedicated. The total cost of all city improvements was $572,623, or $943 for a lot 60 feet in width. Roadways in the streets vary from 24 to 30 feet in width and are paved with concrete, as are the 18-foot alleys. Six-foot concrete walks were laid down on each side of all streets. Observation of pedestrian and vehicular traffic conditions in this district indicated that the facilities provided were far in excess of actual needs. For example, one 6-foot walk instead of two on each street would take care of all the pedestrian traffic originating in this territory, and one 30-foot vehicular traffic pavement for each block would be more than sufficient to take care of the local requirements. The alleys could therefore be eliminated.

Obviously, the present system of platting and improving residential districts is not economically sound, and the elimination of all but those conveniences necessary is desirable.

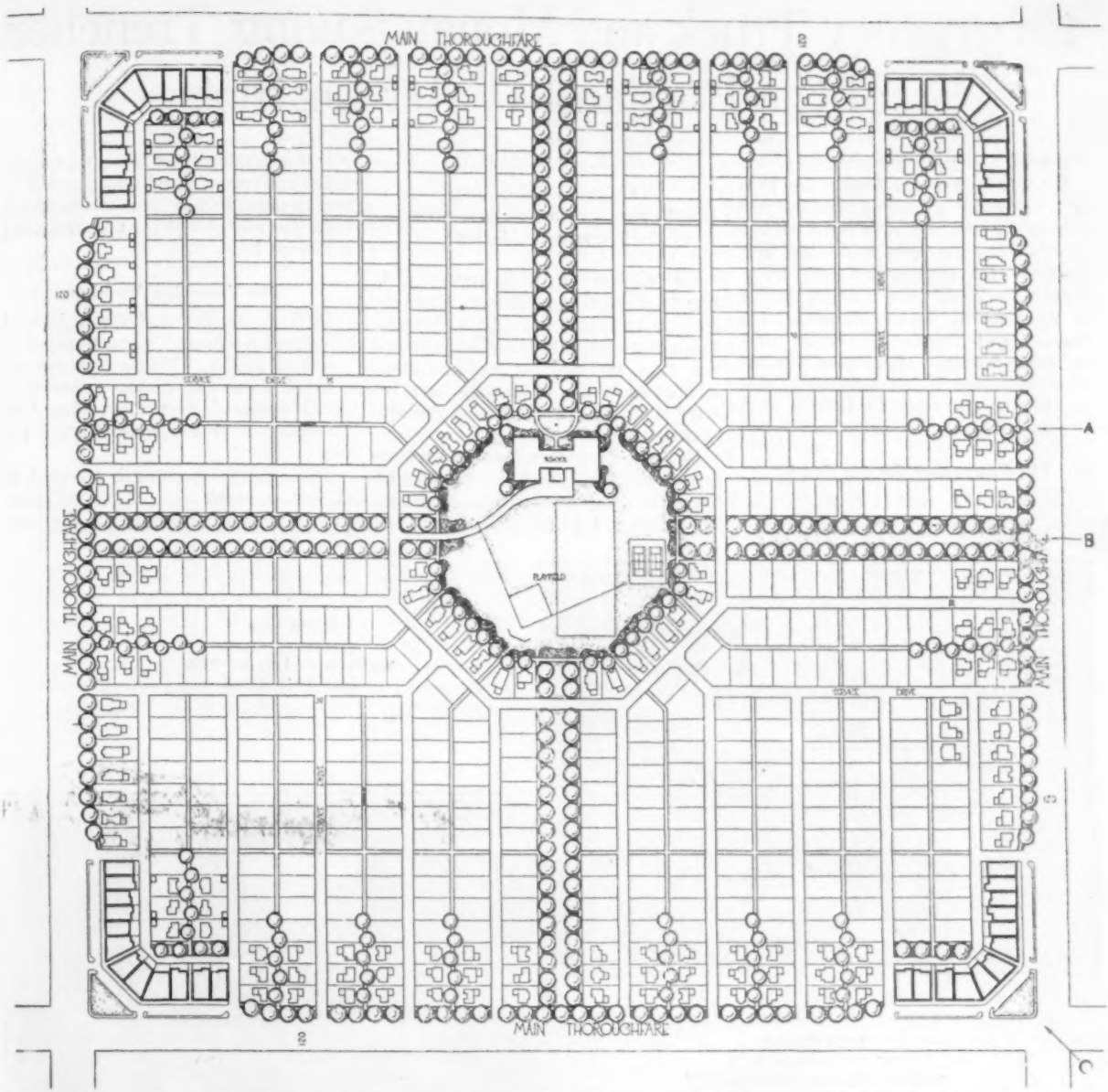
Old and New Plans Compared

Working on the theory that school and playground areas might be dedicated for public use, living conditions bettered and improvement costs lowered, all without sacrificing any more land for public use than under the present system, a plan for the development of a quarter-section has been designed. In theory this plan follows many of the principles contained in the design of Radburn, N. J., a housing development sponsored by the City Housing Corporation of New York City.* In this suggested plan lands dedicated for public use totaling 28.98 per cent include 30-foot service drives, 10-foot pedestrian lanes, parkways, and one 8-acre school and playground site; while under the present system lands dedicated for public use totaling 29.30 per cent provide only streets and alleys.

The dwellings in the new plan are to front toward the center of the block through which the pedestrian lane runs, facing one another across a lawn 60 feet in width. The garage and rear end of the residence would front on the service drive, which could be paved its full width of 30 feet, providing as much roadway space as now obtains on the present residential streets. In Highland Park, Dallas, Texas, a developer has constructed homes in this manner on a standard block, and the results are surprisingly pleasing.

The cost of improvements for a 60-foot lot in the proposed plan total $555 as against $943 under the present system, a saving of $388. A further saving could be made by paving the service drives with macadam instead of con-

* See The American City for November, 1929, page 142.



DESIGN FOR A QUARTER SECTION DEVELOPMENT PLATTED TO CONFORM WITH ACCEPTED STANDARDS FOR A RESIDENCE NEIGHBORHOOD. THE PLAN WAS PREPARED FOR THE BOARD OF PUBLIC LAND COMMISSIONERS OF MILWAUKEE, UNDER DIRECTION OF MILTON BRENOGEL, SENIOR PLAN ENGINEERS, AND THE AUTHOR

crete, and it seems logical that with less traffic using the service drives than the present residential streets, this is feasible. All the lots in the new plan are platted 60 feet wide by 100 feet in depth, being more adaptable to the Colonial type home which has become popular in late years. The 60 x 100-foot lot is also preferable to the 40 x 120-foot lot for the reason that more space between dwellings can be obtained.

Other Advantages Over Present Methods

Through traffic by-passing the district would use the wide quarter-section line main thoroughfares which border it. Children living within the area can use the playground and school facilities without having to cross a through street.

Shopping centers are located at the four corners of the district where the major thoroughfares intersect, and are ample in area to take care of the needs of the adjacent community. If necessary, however, these business centers can be expanded.

Altogether, this new design seems to offer many advantages over our present method of subdividing lands. Only such facilities for traffic as are necessary have been provided, with the saving in paved areas devoted to parkway, playground and school site needs. The service drive system of travelways throughout the district will discourage traffic not having business in this area from trespassing as it does now on our residential streets. Much saving in the wear and tear on the pavement is therefore possible.

The saving of $388 in the cost of improvements for a 60-foot lot in the new plan, is, of course, another important element in its favor.

Orienting the dwellings so that they face one another across a lawn with no vehicular travelway between, would certainly seem to be more desirable. It is this phase of the plan that calls for a radical change in our present method of development, but the benefits that would accrue merit serious consideration.

Though it seems hardly within the scope of the city planner to solve the problem of individual ownership for wage-earners, subdivision design and land economics study certainly offer large cost reduction in many of the essentials.

Emergency Truck and Money-Saving Trencher of the Portland Water District

By J. W. GRAHAM
General Manager
Portland Water District
Portland, Maine

THE policy of the trustees of the Portland Water District has been to carry on the operation of the district by the use of modern equipment. When the plant was taken over in 1907, the construction and maintenance work was being done by the use of three teams. Today, eighteen automobiles and trucks are being used. While the operation of this fleet is somewhat expensive, it has resulted in giving prompt attention to troubles and complaints.

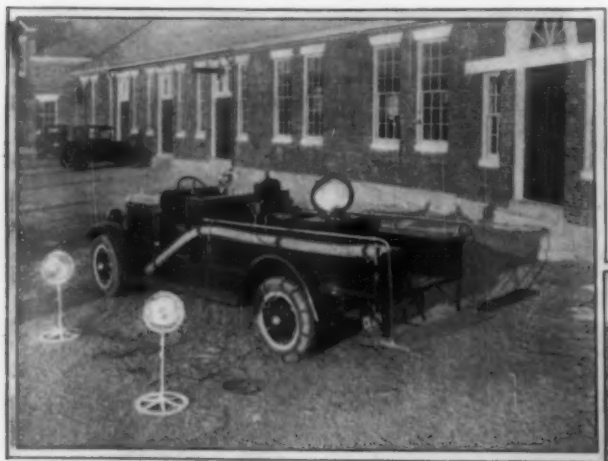
The Emergency Service Truck

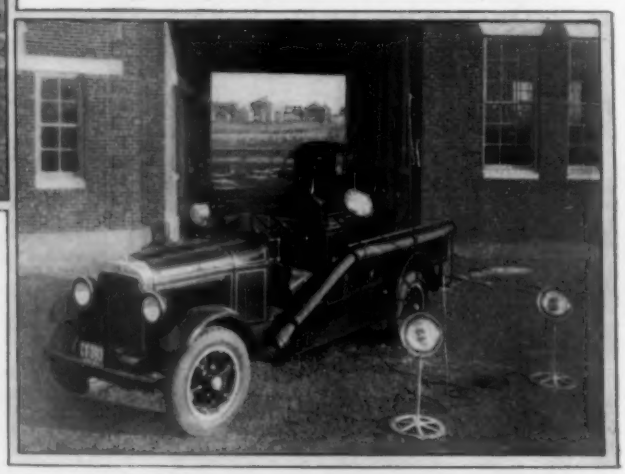
In order to care for emergency troubles, a special service truck was purchased, consisting of a 1¼-ton Graham Brothers chassis on which is mounted a body 8 feet long, measured from the back of the seat. The body is 1 foot, 5 inches high, and the locker 12 inches wide. The width over-all is 4 feet 5 inches, and the truck weighs, when fully equipped, 5,600 pounds.

The body of the truck contains a tool-box, running the full length on each side. The tool-boxes serve as seats to carry extra workmen when necessary. In the tool-boxes are carried picks, shovels, wrenches of various types, rubber coats and boots, gate books, electric hand lights and extension cords, jacks, tow lines, etc.; in fact, the tool-boxes contain all tools necessary to handle emergency water-works troubles, such as breaks on main lines, distribution mains and hydrants. The jacks and tow lines are used for assisting automobiles or trucks which may have become stuck in soft trenches or run into open trenches.

In the open space in the rear a motor-driven centrifugal ditch pump, made by the Trench & Marine Pump Co., is carried. This is a portable pump and can be removed from the truck to a job nearby and wires laid from the truck to the pump, which is operated by an electric generating unit carried by the truck.

The electric generating plant is a Kohler 2,000-watt, 110-volt, direct-current unit. This plant is permanently attached to the truck, the gasoline supply being taken from the tank on the truck, so that it is not necessary to have an extra gasoline tank. The generating unit, however, has an independent battery for starting it. Inasmuch as the generator is automatic, it starts when the load is applied and stops when the load is removed. The generator is capable of operating three 250-watt searchlights and several hand lights, as well as the electric ditch pump, which has a capacity of 70 gallons per minute against a 20-foot head.





TWO VIEWS OF THE PORTLAND WATER DISTRICT EMERGENCY TRUCK, TAKEN IN THE NEW YARD OF THE DISTRICT BUILDING

NOTE THE ELECTRIC UNIT MOUNTED BACK OF THE DRIVER'S SEAT

The Trenching Machine

In 1926, the Portland Water District purchased a Barber-Greene trencher at a cost of $5,750. This machine can dig a trench 7 feet deep and 21 inches wide, and is operated from about May 1 to December 1, or 190 working days per year.

The machine operator is required to fill out a blank each day, and from these reports it is possible for the trustees to determine very closely the cost of operation. The machine is used wherever the size of the jobs warrants. During 1929, the machine dug about 5 miles of trench at an average rate of 68 feet per hour, the average cost of trenching being 21 cents per foot. The average cost of hand trenching was 33 cents per foot. The largest day's work done was 1,800 feet, at a cost of 14 cents per foot.

During 1926, the machine was new and was operated only about half-time, as there were not sufficient jobs to make it worth while to use the machine. Of the 1,700 working hours for the season of 1926, the machine was on the job

Portland Water District
BARBER-GREENE TRENCHER—DAILY REPORT

Job _____ Date _____ 19

Hours Digging	from	A.M. to	A.M.	ft. dug
	from	P.M. to	P.M.	ft. dug
Hours Delay	from	A.M. to	A.M.	
	from	PM. to	P.M.	
Cause	Repair Parts			
Hours Care	from	A.M. to	A.M.	
	from	P.M. to	P.M.	
Cause				
Hours Idle	from	A.M. to	A.M.	
	from	P.M. to	P.M.	
Cause				

Moving from Job _____ To Job _____

Operator	hrs.	Gasoline	gals.
Helper	hrs.	Oil	qts.
Soil		Grease	lbs.
Weather			
			Operator

C. P. CO.

FORM USED FOR MAKING DAILY REPORT OF WORK DONE BY THE TRENCHER

850 hours and, of the 850 hours, it actually was digging 425 hours. During this time it dug 28,324 feet of trench at an average rate of 68 feet per hour. On one job it dug at an average rate of 132 feet per hour and on another 220 feet per hour. The cost of operating, including operator, helper, gasoline and oil, was 4 cents per foot. The range in cost was from 1 cent to 8 cents per foot. In some cases it has been found necessary to do additional hand work to complete the trench. This additional cost averages 11 cents per foot.

Depreciation and Sinking-Fund Charges

The district charges off 25 per cent yearly for depreciation and 5 per cent for the use of the money and sinking-fund requirements. This makes a fixed charge of $1,700 yearly against the machine. Using these figures, it is found that the average cost for trenching for the year was 21 cents per foot. On other jobs where hand work was used, the average cost was 33 cents per foot. This shows a saving for the year of 12 cents per foot on 28,300 feet, or $3,400.

In 1927, the machine dug nearly twice as much trench as in 1926, or 31,300 feet in 1,850 working hours, 760 hours of which the machine was actually digging, with an average of 68 feet per hour and an average cost of 20 cents per foot for trenching. The saving over the hand labor for 1927 was $6,150, or in that one year more than the total cost of the machine.

As a part of the cost for each job, the trencher is charged against the job at the rate of $4.50 per hour, for the hours it is actually digging. The entire cost of the machine has been much more than paid off in this way and the machine is still in excellent condition.

The figures for 1928 and 1929 showed practically the same savings as in 1927.

The Booster Idea Gives Way to the Better Idea in City Development

HERE is a heartening sign of the times! The Chamber of Commerce of the United States, which through its Civic Development Department is giving increasing attention to city planning and other fundamental problems of municipal progress, is also urging, through its Commercial Organization Department, the *better* idea rather than the *booster* idea as a chamber of commerce motif. News Letter No. 284, of January 15, 1930, says:

"Some time ago in these pages we raised and endeavored to answer the question, 'What is the objective of the Chamber of Commerce?' Recent correspondence with the Secretary of the Macon, Ga., Chamber of Commerce has brought forward a statement of objective, the germ of which is:

" 'The Macon Chamber of Commerce has never conceived its purpose to consist primarily in the promotion of growth. Our philosophy is that our only excuse for existence is that we hope to increase the prosperity, living standards, happiness and welfare of the people of Middle Georgia. Growth is necessary to this end and . . . is within itself purely an incident and not an objective.'

"Back of programs of work and plans for growth is the human element. Business and industries have been developed by men as part of their effort to make life richer and better. Material progress is an outgrowth of man's effort to increase the comfort and happiness of increasing numbers of people by improving and more widely distributing the satisfactions of life.

"Chambers of commerce have come to be more than commercial bodies. The commercial motif is inevitably and properly and perhaps even dominantly present; but it is now accompanied by a distinct civic overtone. Business does not live to itself alone. It recognizes the presence and the influence of factors of life remote from the business field. But the remoteness is only apparent. The life of a community is a fabric. No thread can be neglected.

"The booster idea of making everything bigger and better is gradually yielding to one that is not only idealistic but scientific—that of making things better for their own sake, knowing that bigness will then either follow or will not greatly matter."

Civic Undertakings of an Active Chamber of Commerce

JUST how active and effective a wide-awake Chamber of Commerce may be along civic lines is well illustrated by some of the accomplishments of the Civic Bureau of the New Orleans Association of Commerce during 1929.

Its annual report listed, among others, the following achievements, which are general enough in character to suggest objectives for other chambers of commerce:

"Organized public opinion and speeded up city drainage program through the additional expenditure of $150,000.

"Conducted survey revealing defective sidewalks in 109 spots in business section. Repairs were made in most instances at the Civic Bureau's request.

"Organized and established the Greater New Orleans Choral Society.

"Submitted recommendations for the improvement of high school textbook on fire prevention prepared by the National Board of Fire Underwriters at the suggestion of the Bureau.

"Inaugurated movement to stagger leases in New Orleans.

"Maintained cooperative campaign to prevent the practice of posting signs on trees and poles on public property.

"Urged the installation of names on all street corners.

"Had trash cans placed at 42 locations.

"Organized campaign to stimulate Christmas decorations.

"Disapproved location and recommended elevation of tracks in connection with proposed Union Station.

"Made recommendations in personal conference with district judges and court officials for rectifying jury abuses.

"Sponsored movement toward suppression of ant and termite."

Salvage Operations for Small Fire Department

Proper Equipment and Effective Methods Can Avert Much of the Water Damage at Fires

By
O. J. SWANDER
ENGINEER
KANSAS INSPECTION BUREAU
TOPEKA, KANSAS

IT has been estimated that of the total fire waste in the United States only 25 per cent is actually fire loss. The remainder of the damage is from the water used in putting the fire out. Some of this loss is of course unavoidable, but probably 50 per cent of the water damage could be averted by covering stocks, draining excess water from the building, cleaning up after a fire, and properly handling damaged goods. Since such a large per cent of fire waste is actually a water loss, more attention should be paid to improving loss records by reducing water damage.

There are a few well-organized salvage corps in our large cities, but in the average department even in our fair-sized cities almost no attention is paid to salvage operations. This is partly due to the well-grounded belief that such work is the duty of fire insurance companies. This, however, can hardly be expected; it would be as well to expect the fire insurance companies to maintain the fire department. Maintaining a separate organization for salvage work would be an uneconomical arrangement in all but the larger cities. It is far cheaper to add the necessary equipment to the fire department.

No large expenditure for men or materials is necessary. Salvage methods can be improved if several trained men can be employed to do nothing but salvage work, but this cannot be expected in the average department. Every community large enough to support a volunteer or paid department is large enough to have a few pieces of salvage equipment and to pay attention to salvage methods.

Salvage Covers Are Essential

The most important equipment for salvage operations and the largest single item of expense is the salvage covers. These are waterproof covers commonly 12 feet by 18 feet, or 14 feet by 18 feet. The number to be provided will depend upon the size of the community. Even two or three covers would be of value, but more are desirable.

These covers are used to cover furniture, stock, and burned roofs, and to make catch-alls. For instance, consider a fire in a dwelling. The furniture in the room can be pushed to the center and piled, the rugs rolled up and placed on a table or bed, the pictures, draperies, and contents of clothes closets piled on a table or bed, and the whole covered with a salvage cover. Usually, one cover is sufficient to protect all of the furniture in an ordinary room.

In a mercantile occupancy, stock may be piled as compactly as possible and covered with one or more covers. When covering a large pile, the first cover is drawn on from the bottom and the next cover laid with sufficient lap to prevent the water from running under the lower cover onto the stock. In covering goods on counters and tables, it is frequently necessary to use more than one cover, rolling the edges to prevent water from running into the lap. To prevent soiling the stock, the covers should be kept absolutely clean and they should not be pulled across easily soiled articles.

Damaged Roofs Should Be Covered

Covering damaged roofs is very properly part of salvage work. It is often impossible to repair a damaged roof immediately, and rain or snow may seriously damage the building or contents. A cover or two may be placed on a roof until repairs can be made. Most departments make a per diem charge for these covers when they are left on over a certain minimum time.

Usually the saving at the first fire where a cover is used is sufficient to pay for a cover. In one city in Kansas, a fire occurred on the second floor of a mercantile building. It was necessary to use 2½-inch lines, and considerable water leaked through the ceiling to the first floor, which was occupied by a billiard and pool room. The water ruined the expensive pool tables, and a large loss occurred. Had a few covers been available, the tables could have been covered and the damage on the first floor would have been slight. The damage to each pool table would have paid for several covers.

Where there are sufficient covers and men to spread them, catch-alls can be made by covering an entire floor below a fire. It is possible to hold most of the water to the upper floors. An experienced salvage company can safely dispose of a large amount of water by the use of catch-alls and improvised chutes.

The expense for covers can be much reduced by proper care. Facilities for washing and drying are necessary; covers will mildew if they are folded and stored or placed on apparatus while damp. Damaged covers should be neatly repaired. Men should be instructed to be careful in handling covers at fires; they should not be spread over glass or other sharp débris, and unnecessary walking on the covers should be prohibited. Before covering roofs, care should be taken to remove nails, tin, or other sharp properties that may damage covers.

Ways of Preventing Damage

Much water damage can be avoided by promptly cleaning up after a fire. Scoop brooms and squeegees should be carried so that all excess water can be removed from the building. The proper handling of damaged goods is important. For instance, if a fire occurs in a furniture store or warehouse, and crated furniture is wet, the wrapping should be removed immediately, otherwise the finish will be ruined and the glue softened. In a hardware store, the stock should be dried and water removed from the building as quickly as possible. In a men's furnishing store, work goods of all kinds should be dried promptly to prevent buttons and buckles on jumpers, overalls, etc., from rusting and damaging the garments.

Even before a fire, the fire department can suggest ways to reduce damage in case one does occur. Officers can suggest that display cases and cabinets of watertight and sturdy construction be used, and that shelves be set out from the wall and be provided with a back either of wood or of wire netting. Setting shelves out from the wall makes it possible to drop a cover over the shelves. If stock is piled against the wall, water will run down the wall into the goods. False ceilings, decks, and display cabinets for garments should be of sturdy construction and watertight. Paper stock, flour, etc., should be piled on skids about six inches from the floor, so that, even though considerable water stands on a floor, the stock will not be damaged.

Skilled knowledge is necessary if the salvage problem is to be properly handled, and no fixed rules can be laid down. Every fire will present new problems. Once it is clearly understood that the main function of the fire department is to prevent fire waste and not merely to extinguish fire, more attention will be given the subject. The live chief who is looking for a way to improve his loss record will not overlook the importance of salvage operations.

Utility Company's Victory in Supreme Court May Stimulate Municipal Ownership

United States Tribunal Awards Baltimore Street Railway Straight Ten-Cent Fare, Adopting Company's Views on Depreciation and Rate of Return

FIVE weeks after the decision in the Los Angeles Railway case, briefly commented upon in THE AMERICAN CITY for January (page 165), wherein the five-cent-fare franchises of the Los Angeles Railway Corporation were declared void, the United States Supreme Court rendered another street-railway decision, of much more importance to cities generally. This was in the case of The United Railways & Electric Co. of Baltimore v. West et al., Public Service Commission of Maryland; the Court's opinion, written by Justice Sutherland, was handed down on January 6, and, with two dissenting opinions, was reported in the *United States Daily* for January 7, 8 and 9.

The company had applied to the Commission for an increase in revenue and had been granted a 10-cent cash fare with four tokens for 35 cents (8¾ cents per token). Not satisfied with this, it carried the case from the Court of Appeals of Maryland, which approved the Commission's order, to the United States Supreme Court, asking for a straight ten-cent fare, and won a sweeping victory, although from a divided bench.

While the obtaining of a ten-cent fare is not one of the fundamentally important points in the case, it is nevertheless a matter of considerable interest; for, although many cities, especially the smaller ones, have ten-cent cash fares with lesser rates for tokens or tickets, it is a matter of some surprise when a straight ten-cent fare is authorized for a city of over 800,000 people.

The vital points in the decision which contribute to the high rate of fare, are the position of the Court that a rate of return of less than 7.44 per cent on the value would be confiscatory, and that the annual depreciation allowance should be based on present value of the property, rather than on its original cost. The valuation itself was not an issue, having been established in a previous case.

Return on Valuation

While the Supreme Court has approved rates of return as high as 7½ or 8 per cent where they were not matters of dispute, it has not heretofore taken occasion to pass upon such rates when contested, and it comes as a distinct shock to the patrons of public utilities to have it declared that confiscation of the company's property in this case would result with any rate of return less than the 7.44 per cent which the company was willing to accept as a minimum.

The fare schedule granted to the company by the Commission was estimated to yield a return of 6.26 per cent on the rate base, after depreciation had been computed as approved by the Court; and, as Justice Brandeis said in his dissent, "A net return of 6.26 per cent upon the present value of the property of a street railway enjoying a monopoly in one of the oldest, largest and richest cities on the Atlantic seaboard would seem to be compensatory." The Court's majority, however, enlarged upon the position taken some years ago in the Bluefield Water-Works Case (262 U.S., 679), when Justice Butler stated: "The return should be reasonably sufficient to assure confidence in the financial soundness of a utility, and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties." The Court in the present case goes so far as to state that, in order not be confiscatory, the rate of return should provide a surplus after interest and reasonable dividends have been paid, and says further: "In the light of recent decisions of this Court and other Federal devisions, it is not certain that rates securing a return of 7½ per cent or even 8 per cent on the value of the property would not be necessary to avoid confiscation."

Inasmuch as the last-quoted language of the Court tends to be alarmingly general, without reference to any precarious condition for the company in question such as might be expected with many street-railway companies in view of the fact of automobile competition, the decision tends to emphasize the importance of the question whether the rate of interest possibly required for new funds—high in many cases because of past over-capitalization—should be a controlling element in determining the rate of return for the entire investment. In the decision it is mentioned that the present capital of this company consist of $24,000,000 of common stock, $38,000,000 of ordinary bonds, and $14,000,000 of perpetual income bonds. The latter bonds carry an interest rate of 4 per cent, and a large part of the other bonds are at the same rate. A realistic view of such a structure, which is fairly representative of utilities in general, would indicate that in order to pay even an 8 per cent return on new capital, no such percentage would be necessary on the entire investment, and, if permitted, would go chiefly to increase the return

The Silver Lining

The recent Supreme Court decision discussed in the accompanying article continues a line of judicial opinions that is discouraging both to utility consumers and to friends of commission regulation—a line that includes the Southwestern Bell Telephone case, the Indianapolis Water case and the O'Fallon Railway case. These three were concerned with valuation, imposing more and more completely upon the regulatory process the vagaries of the present-value theory, in contrast to which the freedom of municipally owned utilities from such considerations appears in refreshing relief—while at the same time the matter of municipal purchase of a utility is made more difficult.

The Baltimore case, however, concerns itself with the rate of return held necessary to avoid "confiscation," and with the amount that can be charged against utility patrons to meet depreciation. With both of these elements of rate-making, the advantage is all on the side of the municipal utilities. As against the increased rate of return allowed the private utility, permitting in the usual case large dividends on common stock of doubtful original validity, the city-owned system pays moderate interest on actual cost. And as against the allowance of larger charges for depreciation, without guarantee that the consumer will get the benefit, the municipal utility normally follows depreciation or amortization policies that tend to lower rates, rather than to raise them. Baltimore, with its ten-cent fare and the Detroit municipal system, with an average under seven cents, may not be thoroughly typical, but they are highly significant.

on common stock to quite a handsome percentage.

This liberality of the Court is further emphasized when we consider the fact brought out by Justice Brandeis, that the $75,000,000 valuation previously approved includes $5,000,000 for easements in the streets, not representing investment by the company, but merely a privilege granted by the city. The Court, according to Justice Brandeis, would have been completely justified in deducting this figure from the valuation, inasmuch as it represents franchise value which, under Federal decisions, is not a proper element in a rate base. This would increase the rate of return from the Commission's fare schedule to 6.70 per cent on $70,000,000. Furthermore, reference to the underlying valuation case (P.U.R. 1926 C, 441) shows that the valuation also contains an allowance of 12½ per cent for "going value," or $8,560,210—likewise not representing capital investment, at least in any such amount.

The Commission did not determine the original cost of the property, but the company has placed it at $68,158,908, and the People's Counsel at $57,000,000, these figures, however, including some $8,000,000 of superseded property. Taking the company's figure, less the latter item, gives a maximum cost figure of about $60,000,000 for the existing property, whereas the bonds mentioned in the decision total $52,000,000, indicating a not unusual condition as to the real meaning of the common stock, to which, as stated, the entire excess of the rate of return allowed over the bond interest would accrue.

Annual Depreciation and Present Value

The attitude of the Court on the charge for depreciation has a certain amount of plausibility, if the present-value theory is accepted for the rate base; but it is greatly to be doubted whether it has as much pretension to validity as even that quixotic doctrine. The three dissenting justices—Brandeis, Holmes and Stone—took strong exception to the attitude of the majority in the matter, and claimed that the usual business practice of basing depreciation on the actual cost of the depreciable property provides a fair and workable method of handling this, whereas basing it on present value presents a host of difficulties. These objections have a considerable validity in themselves, but constitute in a still more significant way a criticism of the present-value basis in rate making. Aside from the fundamental absurdity of basing rates on value when value in any rational sense depends upon the rates themselves, the objections of the dissenters relate very largely to the unworkability of present value as a basis for depreciation (and hence for the rate base), inasmuch as a conscientious effort to follow the theory would require revaluations with every change of price levels, and a redetermination of depreciation accordingly.

Justice Sutherland's opinion, representing the majority, takes the viewpoint that inasmuch as the provision of depreciation allowances is for the purpose of replacing property when it is no longer useful in the business of the utility, the use of the original cost as the basis for computing the amount of depreciation to allow for annually, is illogical. Obviously, there would be logic in providing exactly the amount necessary for the replacement of a worn-out unit at the time when replacement becomes necessary, but it is equally obvious that as this is a matter of the uncertain future, it cannot be done, particularly since even the kind of unit used to replace the one that is worn out may be radically different, and may cost considerably more or considerably less than an exact duplicate of the original unit would cost if it were still standard at the time of replacement. It is therefore widespread depreciation practice to accumulate annual amounts sufficient, with salvage credits, to equal the cost of a given unit on the books of the company by the end of its estimated life, letting the discrepancy, whichever way it may lie, between the cost of the replacing unit and the amount obtained in this way, be taken care of by adjustment of capital. The chief point of logic in the Court's position is merely the preservation of consistency between the rate base and the depreciation base, which would seem particularly to the point if the cost of the property on the books were generally rewritten in detail to conform to an established rate base; but this is not commonly done, although to be thoroughly consistent it should be done along with the establishment of a complete new valuation whenever price levels change.

Justice Brandeis points out that, as a matter of fact, the setting-aside of the somewhat arbitrary amount which the street-railway company had been in the habit of providing, an amount which is almost doubled by the decision of the Court, had actually maintained the property throughout the period of high prices, and had accumulated a small surplus as a reserve, and he points out that if the added amount of depreciation allowance ordered by the Court were omitted, the return resulting from the Commission's rate schedule would be 7.78 per cent, on a valuation of $70,000,000.

A Double Charge

The greatest criticism of the Supreme Court's attitude on depreciation, however, is that it does not work both ways. It has been emphatically laid down in previous decisions that a balance in a depreciation reserve, accumulated out of payments by consumers, is entirely the company's, the consumers having no assurance that it will be used only for replacements as intended. It cannot, even though excessive, be used to render a rate increase unnecessary. If invested in property extensions, a proper enough procedure pending the actual occurrence of replacements, no corresponding deduction will be made in the rate base, unless the Court is satisfied that "actual depreciation" has taken place in the property to a corresponding extent; and inasmuch as such depreciation is impossible of physical measurement or observation in most cases, but is a loss of value related primarily to the future date of replacement, court allowances for such accrued depreciation have seldom borne any close relationship to the rate of annual depreciation approved, and under the new Supreme Court rule the connection will be still more remote. The net effect is, to a varying degree, a double charge against the consumer.

Incidentally, it should be mentioned that a more rational and encouraging attitude in this matter is presented in the recent decision of the United States District Court in New York Telephone Co. v. Prendergast et al. (*New York Law Journal*, November 25, 1929).

Rate-Making for Utility Companies

In view of the continuing line of Supreme Court decisions that are helping to make state regulation of utilities increasingly ineffective, any city contemplating the sale of a municipally owned utility to a private corporation should bear in mind the probability that:

1. The utility company will be permitted by the courts to base its rates, not on the actual, prudent investment, but on so-called present value, determined chiefly by the cost of reproducing the property, and including an arbitrary addition for "going value," more or less hypothetical overheads, and working capital, whether provided by investors or patrons.

2. The company will be permitted to earn on the entire value thus built up a return of 7 to 8 per cent, which, if most of the actual investment is in bonds paying 6 per cent or less, may mean much more than 8 per cent on the common stock.

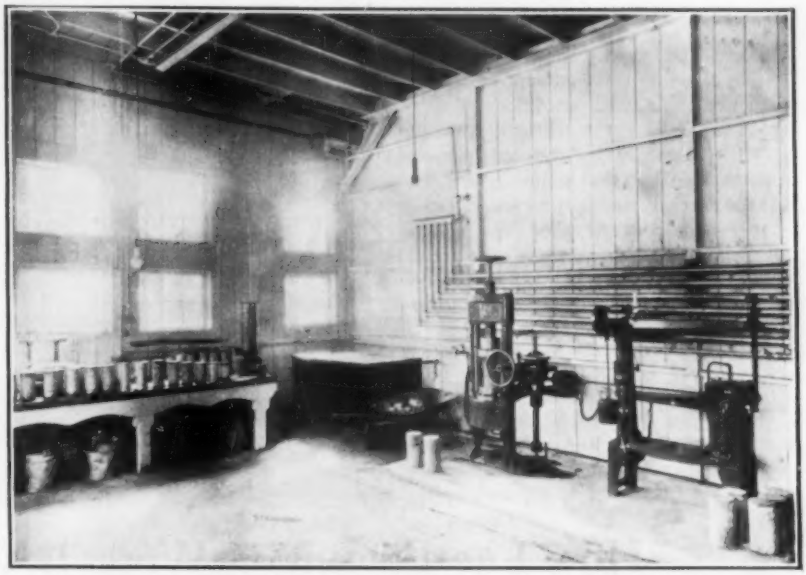
3. The company will be permitted to charge against its patrons a percentage for annual depreciation based on "present value," without any assurance that it will be used for the purpose stated and that it will not become in part an addition to the company's return.

4. A franchise or contract accepted by the utility, whereby the city expects that rates and service will be adequately controlled, may be overruled by state commissions or the courts.

County Testing Laboratory a Busy Place

The Testing of Materials and the Design of Concrete Important Activities of Laboratory of Board of County Road Commissioners, Wayne County, Mich.

THE testing laboratory of the Board of County Road Commissioners of Wayne County, Mich., continues to justify its existence as a necessary part in an efficient road-building organization. Beside the inspection of all sewer pipe and drain tile and the testing and inspection of materials for concrete, the laboratory made final checks of concrete involving 1,131 cylinders and 1,114 cores in the fiscal year ending August 31, 1929.



A SECTION OF THE TESTING LABORATORY OF THE CONSTRUCTION SHOPS AT WAYNE, MICH., WHERE DAILY TESTS ARE MADE OF MATERIALS USED IN CONCRETE ROAD AND BRIDGE CONSTRUCTION

Testing Tile for County Airport

In addition to the regular testing of sewer pipe for tensile strength and absorption, which involves approximately one per cent of all such material delivered for road construction, the laboratory tested all the drain tile and sewer pipe for the new county airport. The site for this air field is somewhat low and, as the airport is to have an A-1-A rating by the Department of Commerce, the drainage of the landing field assumed huge proportions. Daily tests were made of enough tile to keep eight trenching machines in operation for a period of three months.

Concrete Aggregate and Cement Examined

All cement tests are made by commercial laboratories, as they maintain men at the various cement plants and thus are able to look after this work more economically. All materials other than cement are tested and inspected by the county laboratories. Very close and rigid inspection and screen tests are made of the grading of aggregates to check the fineness modulus, and the percentage of silt and organic matter is determined by the calometric test.

THIS CORE MACHINE IS KEPT BUSY THE ENTIRE SEASON

The machine drills a core 4 inches in diameter from the road, permitting a check on depth and strength of concrete. During the last season 527 cores were taken

Inasmuch as construction materials come from a great many sources, each project has a different concrete design. All orders of aggregates are frequently sampled and checked to determine whether the materials are graded to conform to specifications and requirements. The fineness modulus forms the basis of design of the concrete mixture, and the proportions of sand and pebbles are computed for a given amount of cement. The designed mix must be altered as any change is detected in the fineness modulus of the incoming material.

The control of water is very important, and excess water weakens concrete, producing a sloppy mixture and segregation of materials, which is not tolerated. In fact, the addition of but one point of water more than the design calls for decreases the early strength and the resistance to wear of the finished surface. All design is based on a definite quantity of water, and for this reason a rigid water control is demanded of all pavers.

Test Cylinders Made Daily

Every day concrete cylinders are made at each project by the inspector. The cylinders are brought to the laboratory and broken at different ages and from the results obtained corrections of the mix are made when necessary. These results furnish a definite check on design and contstruction methods.

Throughout the season a coring ma-

chine is continuously in operation in taking cores in concrete pavements which are cured for 7-, 14- and 28-day periods. The cores are subjected to compression tests in the laboratory, and any variations in the strength of concrete are quickly determined and remedied.

Daily and weekly report cards for results of slump tests, amount of cement used per cubic yard, conditions of subgrade and weather conditions are sent to the laboratory by the construction superintendent so that an accurate check is kept as each project progresses. This cooperation between the construction division and the laboratory is of material value in maintaining high strength and consistency of concrete through proper control of the mix.

Cores Check Specified Thickness

One of the features of the construction of pavement is to see that accurate depth of concrete is maintained as specified on the plans and to aid in keeping the cement content constant. The core-drilling machine provides the means of detecting this, as cores are taken along the center and both edges of all pavements constructed, and any differences in depth are readily determined.

To provide the most even surface possible on roads, the inspector on each project uses an aluminum straightedge 10 feet long with which he tests the surface elevations immediately after the finished machine has passed. This test is repeated the next morning after the concrete has its initial set. Any variations in the surface of the roadway are then corrected while the concrete is still "green." The specifications permit a variation of not more than 1 inch in 10 feet. Upon finding a variation of more than ¼-inch, the location is marked and this spot immediately rubbed down to meet the specifications.

The laboratory also designs the concrete for all bridge and grade separation projects, as well as high early concrete for patch work for the maintenance division.

Winter Research Work

During the winter, research work is carried on and new methods are devised for securing the best possible quality of concrete. It is not to be assumed that the full value of the laboratory lies in the volume of tests nor the number of rejections of materials. Neither is it intended to function primarily as a detective bureau for the discovery of defects in materials or construction after work has been completed. Its essential value lies in avoiding the use of defective materials and in seeing that materials meeting fully the specification requirements are properly incorporated in the finished work.

It is of extreme importance that the design of concrete and the control of strength and materials which are essential in its construction be handled in such a manner that the roads in Wayne County shall be built in accordance with the most up-to-date and economical methods. It is felt that these results are being satisfactorily accomplished.

How Fire Prevention Work Is Carried on in 53 Communities of New York State

ONLY 15 out of 62 New York State communities have a fire prevention bureau, they reported recently to the State Bureau of Municipal Information. All but 9 of the other 47 cities and villages conduct fire prevention activities along some lines, however, according to the reports.

Those having fire prevention bureaus or divisions are Batavia, Dunkirk, Glens Falls, Mount Vernon, New York, Plattsburg, Schenectady, Utica, Catskill, Endicott, Fredonia, Haverstraw, Ilion, Penn Yan and Rockville Center.

Prevention work in the other communities takes the form of regular or periodical inspections either by the fire marshal, fire chief, fire captains and lieutenants, the fire wardens, or the men themselves. In some instances, this work is much more thoroughly organized than in others, but Beacon, Gloversville, Newburgh, Ogdensburgh, Watertown, Freeport, Medina, and Ossining report that they do not conduct any fire prevention programs.

The number of inspectors in the fire prevention bureaus or divisions maintained by the 15 cities named, runs all the way from 15 in Endicott to but 1 in Glens Falls, Jamestown, Middletown and Ogdensburg. In several communities, however, all the members of the fire department engage in inspection work. In the majority of cases, the Fire Chief is the head of the fire prevention bureau, but other officials supervising that work include the secretary of the fire department, the deputy fire marshal, the deputy chief and chief inspector of fire prevention, the fire warden and the president of the bureau.

Most of the communities assign firemen to the bureau periodically, shifting the men from time to time so that eventually most of the firemen obtain a thorough inspection training. Glens Falls, Lackawanna and Rockville Center, however, reported that they follow the permenent inspection system, thus keeping the same men on the job continually.

The majority of cities inspect buildings and premises in the congested districts each month. Rockville Center, however, inspects them twice a month and Scotia every week. In a number of instances, the inspections in the congested sections are made but two, three or four times each year. Once each month is the most frequent schedule adhered to for inspections in residential and outlying districts, and once or twice a year is the general rule. Several of the communities reported that no inspections are made annually in these sections.

Every community which replied to the question of whether or not fire prevention work reduces fire losses, answered in the affirmative, indicating that they are 100 per cent in favor of that work as a means of cutting down fires. Rockville Center estimates that its rigid inspection and fire prevention program has reduced fire losses in that community about 75 per cent. Lackawanna estimates the reduction as result of such work to be about 50 per cent, and Albany sets the figure at 30 per cent. These three were the only communities which offered any estimate as to the specific amount of reduction in fire losses for which this prevention work is responsible.

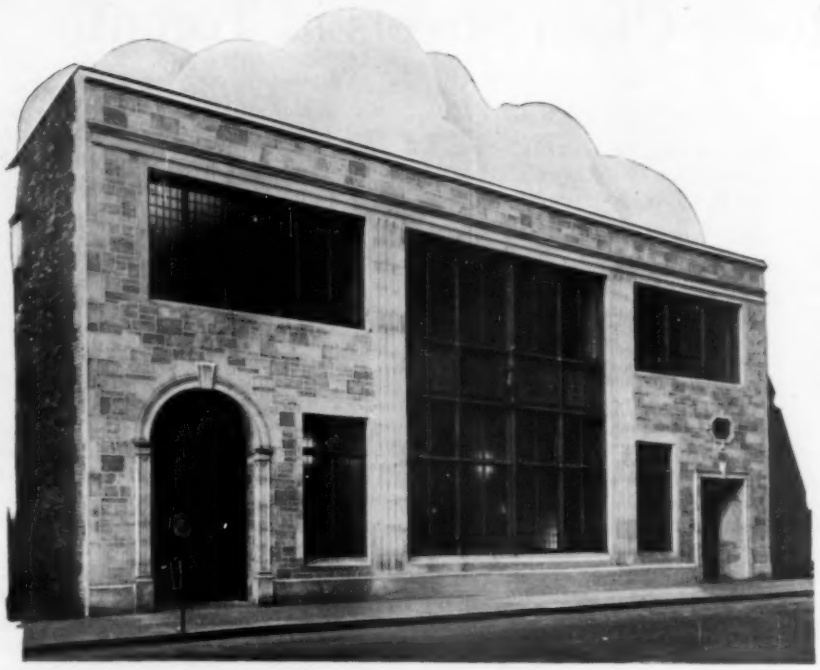
Swimming Pool Sanitation in Portland, Ore.

ALTHOUGH Portland, so far, has no regulations controlling the operation of swimming pools, considerable work is being carried on by the Health Bureau, and is being met with excellent cooperation on the part of the pool operators.

In a recent letter to THE AMERICAN CITY, Leigh H. Churchill, Bacteriologist of the Portland Health Bureau, writes: "The chlorination of each pool is checked by the operator through the use of the ortho-tolidin test, and the residual chlorine content is kept between 0.2-0.5 P.P.M. as closely as possible.

"Our Bureau collects samples of water from the pools at least once each month for laboratory examination. In addition to these, the pool operators bring in several, in order to keep a closer check on their work. A very small percentage of the samples analyzed during 1928 showed counts of over 100 bacteria per c.c. or the presence of B. Coli in the water.

"The laboratory records are open to the public and, as the work is becoming known throughout the city, the number of calls requesting information concerning the various pools has gradually increased. This interest displayed by the public has started keen competition among the pool operators, and as a result everything possible is done to keep the pools clean and in a safe and sanitary condition."



A New Building for an Old City Club

By

GRACE K. PLANT

THE City Club of Cleveland recently dedicated and opened its new home, a handsome two-story building styled in a combination of English and modern architecture. The structure presents somewhat of a studio effect because of the size and number of the cathedral glass windows. Indiana limestone in a random-ashlar field with cut limestone quoins and trim faces the exterior. Flanked by bas-relief figures symbolizing the various elements composing the club membership, a carved wooden figure of Moses Cleaveland, for whom the city was named, looks down upon Vincent Street from the façade.

Unusually high ceilings and decorative treatment in the modern style distinguish the dining-room on the first floor. From the large, paneled hall a stairway, also paneled in pine, leads to a mezzanine and the club lounge, recreation rooms and offices which occupy the second floor.

The outlay for the project, including building reconstruction costs and new furnishings, totaled $45,000, of which $10,000 was contributed by the company which operates the dining-room. The remainder is being raised by the sale of stock to members and by voluntary contributions.

Since its incorporation in 1912 by prominent Clevelanders who perceived a need for the forum type of organization, the City Club has played a leading part in the civic life of the community. Its objects were declared to be: "the investigation, discussion and improvement of civic conditions and affairs in Cleveland; the maintenance of club rooms, library and other facilities of a social club for the use of men desiring to cooperate in the furtherance of these objects; and the arrangement of frequent meetings at which speakers may be heard and questions of civic interest may be discussed; provided, however, that the organization, as such, shall not endorse or oppose any individual or measure."

The Club's annual political gridiron production, known as the "Anvil Revue," has become famous, and the 1929 version drew an attendance of more than 2,000 persons.

Press and public of Cleveland enthusiastically attest the value of the City Club as a medium of education in the arts of government and as a clearing-house of political information. Its ideals are best expressed in its creed, which has achieved a measure of fame, and which has been borrowed or adapted by other organizations, as well as quoted and commented upon widely by the press. This creed was written by Ralph Hayes, who was formerly Secretary of the Cleveland City Club, now the Director of the New York Community Trust, and Vice-President of the company that publishes the *New York World*.

The Creed of the City Club of Cleveland

I hail and harbor and hear men of every belief and party; for within my portals prejudice grows less and bias dwindles.

I have a forum—as wholly uncensored as it is rigidly impartial. "Freedom of Speech" is graven above my rostrum; and beside it, "Fairness of Speech."

I am the product of the people, a cross-section of their community—weak as they are weak, and strong in their strength; believing that knowledge of our failings and our powers begets a greater strength. I have a house of fellowship; under my roof informality reigns and strangers need no introduction.

I welcome to my platform the discussion of any theory or dogma of reform; but I bind my household to the espousal of none of them, for I cherish the freedom of every man's conviction, and each of my kin retains his own responsibility. I have no axe to grind, no logs to roll. My abode shall be the rendezvous of strong but open-minded men, and my watchword shall be "information," not "reformation."

I am accessible to men of all sides—literally and figuratively—for I am located in the heart of a city—spiritually and geographically. I am the city's club—THE CITY CLUB.

We Have Really Clean Streets in Toronto

By H. D. BRADLEY

DEPUTY STREET COMMISSIONER, DEPARTMENT OF STREET CLEANING
TORONTO, ONTARIO

TORONTO has 565 miles of streets, 480 of which are paved; 315 miles of the paved roadway is bituminous macadam, 87 miles bitulithic, 25 miles brick, 20 miles concrete, and 15 miles asphaltic concrete. The remainder consists of the older types of roadways, some of which were laid for experiment and which are being gradually replaced each year with asphalt. Throughout this mileage, 50,600 gullies and catch-basins are provided to take care of the surface drainage.

Cleaning Roadways Is No Small Task

The cleaning of this area of improved roadways, amounting to 7,610,000 square yards, is an extensive task, and the regularity with which the work is done has a direct bearing upon catch-basin cleaning. It lessens the danger of gratings and traps becoming blocked during heavy rainstorms, thereby reducing the hazard of floodings and subsequent claims for property damage.

Patrol System

The patrol system is used entirely in the downtown sections, in business areas, and on main thoroughfares. Each patrolman is provided with carrier, set of metal tubs, each with a capacity of 3 cubic feet, push broom, and scraper. As the tubs are filled, the patrolman leaves them at a designated point to be collected. The streets under the patrol system receive constant cleaning, and may be covered from two to eight times each day according to the district. The remaining section is under the squad system, the men working in pairs followed by a pick-up vehicle, the streets under this system being covered once or twice a week.

Both Wagons and Trucks Used

The horse-drawn 4-yard wagon is used for pick-up work in certain sections, while the motor truck is used to the greatest advantage for picking up the contents of the patrolmen's tubs. At some locations there are from six to eight tubs to be emptied, with a capacity of 18 to 24 cubic feet. In the downtown section a 5-ton motor truck is used for collecting the contents of the tubs. The truck is equipped with a steel body and a partially enclosed top. A conveyor bucket with a capacity of 8 cubic feet is attached to the right side of the body, operating in channel rails. The bucket ascends vertically to the upper edge of the body, then travels horizontally. The weight of the contents causes the bucket to tip, discharging it into the truck. The bucket is raised by chains through a power take-off on the drive shaft.

Disposal of Street Sweepings

The material is disposed of by dumping as land fill. Certain shallow areas are used entirely for street dirt. The heavy cleanings in the spring are dumped in ash and rubbish fills.

In the downtown area the street dirt is deposited at the manure dump of a contractor, who removes any paper, refuse, etc., and adds it to the manure beds, to be later sold as fertilizer.

Many private applications are received from residents for this material for garden fertilizer. It is delivered free of charge. The Department takes advantage of every application, for it means a short haul and a ready disposition of the dirt.

During the fall, when leaves constitute the greatest bulk of the street dirt, difficulty is experienced at the dumps with the vehicles owing to the spongy nature of the material. The fills are kept as shallow as possible and are built up in layers, in order to prevent miring of the vehicles.

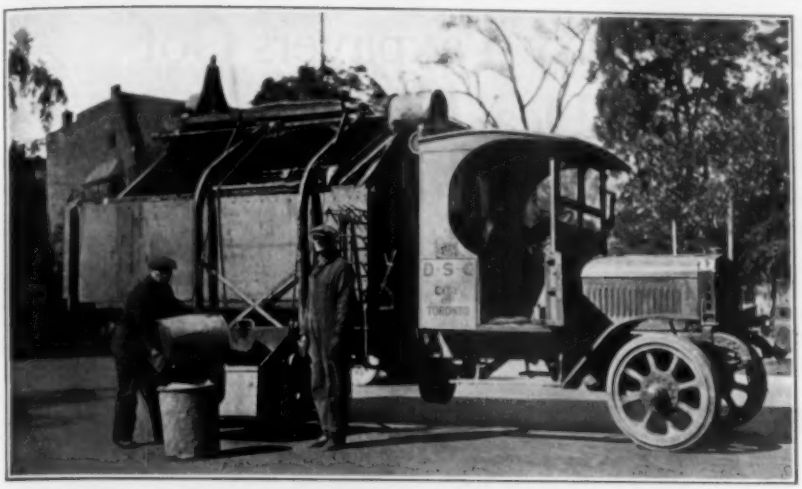
The Parks Department and several vegetable and flower gardeners request fall cleanings for compost heaps or leaf loam, which takes care of a large quantity of leaves at this time of the year.

There are, however, many thousands of yards which can only be disposed of by dumping. During the summer of 1929, 105,600 cubic yards of street sweepings were removed, averaging 13.9 cubic yards of dirt per 1,000 square yards per season. A daily average of 22 4-yard wagons, 23 2-yard carts, and 3 2-ton motor trucks were required in the pick-up service, and 200 patrolmen were constantly in service from April until December.

Catch-Basin and Culvert Cleaning

As I have previously stated, there are 50,600 gullies and catch-basins to take care of the surface water on our roadways. These are all hand-cleaned. The work is carried out systematically after the spring clean-up of the streets. Each street-cleaning district is provided with two culvertmen and a pick-up vehicle. They cover the entire district at the first of the season, which is usually sufficient on the residential streets until the fall, when each basin is again thoroughly

TYPICAL BUSINESS AND RESIDENTIAL STREETS MAINTAINED AS CLEAN AS HUMANLY POSSIBLE BY THE TORONTO, ONT., DEPARTMENT OF STREET CLEANING



THE PICK-UP TRUCK USED BY THE DEPARTMENT OF STREET CLEANING

cleaned in preparation for the winter months.

During the summer months the culverts on main thoroughfares and subways are given such additional service as may be required. It is necessary to give special attention to those located in subways and roadways where there are depressions.

Many householders are of the opinion that the channels are provided on the roadways for the convenience of placing grass cuttings and lawn rakings in them. This practice, in the event of heavy rain, is the most common source of blocked gratings and traps, the refuse being carried to the gratings by the flow of water, often completely blocking the openings, and on many occasions the catch-basin was found to be the reposing place of a bundle of handbills and circulars which otherwise should have been distributed to the householders in the district.

The cleanings are removed by wagons and a 2-ton motor truck with a watertight body, and are disposed of by dumping in rubbish- and ash-fills. During the season of 1929, 12,600 cubic yards of catch-basin muck was removed. The nature of the muck is such that it cannot be dumped indiscriminately in every fill, but should be dumped at isolated locations, in order that no nuisance shall be created.

There appears to be no other means for disposal of street dirt and catch-basin muck, other than that of dumping, and this is a matter largely of local conditions. I do not think the disposal of street dirt by burning is practicable, owing to the great percentage of inert matter. Perhaps 20 per cent would be combustible. There would, however, be no appreciable reduction by weight or volume. Any gain that might be made in this regard would be materially offset by the reduced burning rate of the general refuse.

Protecting the Parking Strip in Detroit

Special Provisions to Prevent Damage from Crank-Case Drippings

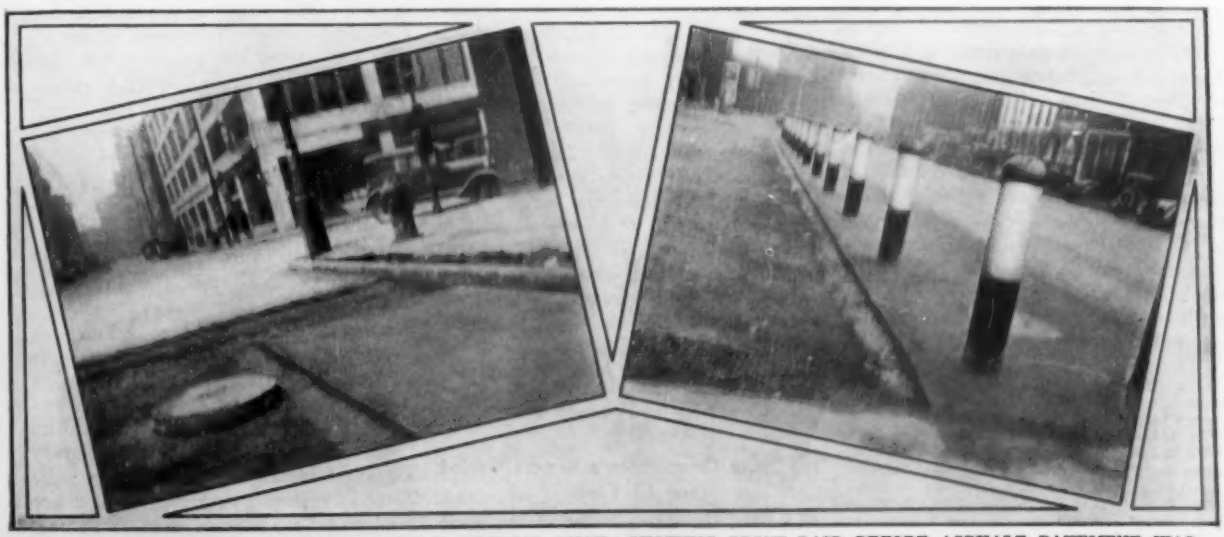
By JAN SCHMEDDING

SUPERINTENDENT OF PAVING, DEPARTMENT OF PUBLIC WORKS, DETROIT

EXCEPT in rare instances, all paving laid in Detroit has an asphalt top. The only other pavement laid is one-course concrete, and that is on short or back streets. In the case of streets having asphalt top, particularly on the main thoroughfares, the gutters have become badly pitted and very plastic because of the continuous parking that takes place on these streets.

This pitting and rutting in the parking strip has been overcome during the last few years by laying a 6-foot strip of brick along the curb. In the resurfacing, widening or repaving of streets, the concrete base is laid over the entire surface as for asphalt. Then a 3½-inch brick is used along the curb for a width of 6 feet before the topping is finally laid.

In laying the brick, a ¼-inch expansion paper is laid along the curb and transversely every 30 feet in the brick. Two rows of brick are laid on the outside edge of the 6 feet parallel to the curb, and the batting is done at the expansion paper along the curb.



TWO VIEWS ON WEST JEFFERSON AVENUE, DETROIT, MICH., SHOWING BRICK LAID BEFORE ASPHALT PAVEMENT WAS COMPLETED

A 6-foot strip of brick laid along the curb east from Second Avenue; and brick laid in a safety zone along the car track west from First Street

How Rockland County Taxpayers Got a New Deal

A Fight for Municipal Reform That Broke Down a Bi-Political "Ring" and Put Progressive Reformers in Power

By

PERLEY MORSE, C.P.A.*

What has been done in Rockland County to bring about reform in local government can be done in any municipality, if the honest and capable taxpayers will get behind an organized demand for modern and economical and non-partisan reform in local administration.

First, the shackles of fear of the ring and the "powers that be" must be severed; second, the people must have a leader who is forceful and sincere; third, non-partisan organization of taxpayers must be carried out; fourth, candidates who dare stand for reform and will say so boldly, must be nominated; fifth, direct action at the polls, irrespective of party, must win the battle.

THAT it is possible to break a "vicious circle," or "ring," in municipal administration, when "good men and true" get together, has, I believe, been demonstrated by what has recently occurred in Rockland County, New York.

The fight for good government in my county was a non-partisan movement of taxpayers, though eventually finding its logical expression at the polls. It was not so much a fight against corrupt or dishonest officials (who can always be eliminated and frequently punished) as it was against political subserviency, self-perpetuating office-holding, and inefficiency and wastefulness in the conduct of municipal affairs.

The taxpayers of Rockland County had long been impotent in the grip of a bi-political machine, which was not Simon-pure partisanship, but in character an unhealthy dictatorship. This machine traded favors, and whether its minions were of one party or the other, voted *en bloc* and acted as if from a common understanding and in mutual interests, irrespective of the will of the taxpayers and voters, over whom they exercised an effective control by intimidation or special privilege. The "ins" got all the gravy, the "outs" got none, and scant justice in their complaints.

The Political and Financial Situation

Rockland County lies close to the expanding metropolitan center of Greater New York and is practically within the Metropolitan District as projected by the Port of New York Authority Engineers. Once a rural community of self-sustaining character, it has become a homeland for a New York commuting population. The newer residents, however, found themselves outside the pale of the local government ring and for a long time took slight interest in a political situation in which they were regarded as outsiders. The provincials, entrenched in office from the highest to the lowest job, had no use for "strangers" from the city, in their political councils.

In fanciful security the local legislative body and the ring bosses and the local minor officers imposed upon the county a yearly increasing debt obligation and a consequent increasing tax rate. Incidentally, they voted themselves annually larger salaries, putting through special legislation at Albany, when necessary, until the salary list of the little county of 56,500 population and of less than $50,000,000 taxable realty, was saddled with a payroll exceeded by but few counties in the state of anywhere near its size or wealth. They even attempted to make the sheriff an appointive officer, and sought special legislation to legalize their illegal acts.

The State Comptroller's Report Buried for 15 Years

In 1912 the Comptroller of the state examined the fiscal affairs of the county, which a few years previously had been honeycombed with corruption, and under a taxpayers' investigation sent its County Treasurer to Sing Sing and convicted some of its minor officials. The Comptroller found that many censored practices of administration still prevailed, including antiquated systems of bookkeeping, "valueless to taxpayers and impossible of intelligent audit," to use his words. He also found that numerous methods of payments for highway improvements were grossly faulty, and large numbers of illegal bills audited and paid. He pointed out numerous irregularities and made drastic constructive recommendations for reform in municipal accounting and methods, to conform with modern municipal practices as prescribed by the Comptroller's office.

This report was buried in the local archives and largely ignored by the officials in power. It was not until 1927 that the Rockland County public heard of the existence of the State Comptroller's report, criticisms, and recommendations of 1912.

An Uprising

As a large taxpayer of the county, and urged by other "newcomers," I investigated at Albany this report, secured a copy, and published it broadcast throughout the county, both in public speeches and through the medium of a weekly sheet that I established, the *Rockland County Taxpayer*, in an attempt to arouse the public to the need of carrying out the reforms recommended by the Comptroller but largely ignored by the "perennial" officials and their political masters who were profiting by the ancient forms of administration and using their positions to perpetuate themselves in office.

In order to bring the examination of the county's fiscal affairs up to date, I called upon the Comptroller to make a new examination of the conduct of county affairs. This was completed late in 1928, after the spirited election of that fall, which began to show an uprising of the taxpayers and voters, who reduced the plurality of the County Treasurer seeking re-election, to a mere 2,500, as against a nearly 5,000 plurality received by the assemblyman, re-elected. The Superintendent of the Poor, not endorsed by the ring, was elected by a

* Mr. Morse is a certified public accountant of national reputation, who has given much time and services to municipal reform and civic betterment. He is treasurer of the City Club of New York and a member of the National Republican Club, having served upon numerous civic and political committee of that and other clubs and organizations. Mr. Morse is the author of "A. B. C. of Government," endorsed by the New York Board of Education for use in the public schools, and has written and spoken frequently upon matters of public concern.

10,000 plurality, and on an opposite ticket.

In 1928-9 I published in full the new report of the Comptroller on the fiscal affairs of the county for one fiscal year of 1927-8.

This report showed that many practices disapproved in 1912 were still continuing, and pointed out numerous derelictions, condemned methods, and illegal claims of some $100,000 audited and paid, including improperly audited and paid highway rights-of-way bills, and bills of county officials for expenses, as well as contracts given out without competitive bids, etc.

The Fight and the Victory

A long-dormant political party took up the cudgels of the fight for better government. It promulgated a platform based upon our advocated plan for reform in county government, including reforms in tax matters, concentrating the tax-collecting function in the hands of the county treasurer, advocating a county health department, putting the police under civil service, abolishing unnecessary offices, and calling for reform in municipal accounting, economy in expenditures, reduction in salaries, proper and legal auditing of all bids, competitive bidding in contracts for public work, legislation to keep highly paid public servants from private practice in the county, and other reformative measures along lines of economy and clean non-partisan government.

The two strongest taxpayers' associations in the county joined me in my demands for reform and for an accounting of those acts condemned by the State Comptroller as improper and illegal, and appealed to the Governor for an independent examination of the county's fiscal affairs and the acts of the county officials.

November 5, the party opposing the long-entrenched bi-political ring was swept into power by an overwhelming vote. The old Board of Supervisors and some minor officers were turned out of power, and the county for the first time in many years sent an assemblyman of opposite political faith to Albany.

The new party at once started a movement to oust the long-entrenched County Attorney, Superintendent of Highways, Chairman of the Board (a holdover by a narrow margin), and a new Clerk of the Board, all reappointed on the eve of the outgoing Board, in their last gasp to retain power.

The climactic issue of the taxpayers was in protest, also, against the imposition, without their consent or an attempt to consult them by a referendum, of a new and unnecessarily magnificent court house and jail that added $1,100,000 to the bond issue, and imposed an ultimate cost upon the taxpayers of the county of over $2,000,000—and on a little county of 56,500 inhabitants, mostly made up of small householders, small merchants and salaried commuters.

A reform administration is in the saddle. After a two years' educational campaign the people have spoken and the Comptroller's recommendations and criticisms are being given consideration by the new officials in power, as well as other advocated reforms.

New reformative legislation is being planned and economies and modern methods of municipal accounting are in view.

The ring is smashed and the taxpayers are for the first time in years adequately represented.

Mr. Henry I. Stetler, head of the Rockland County Taxpayers' Association, has brought an action to compel the restoration of payments made to the County Attorney (a hold-over, last-minute appointee of the outgoing Board) that "appear to have been wrongfully paid, by the county illegally," according to Mr. Stetler, and to overhaul some of the acts of officials of the deposed administration.

For one and one-half years *The Rockland County Taxpayer* published what none of the "crib-eating" weeklies of the county dared print. It gave the taxpayers and the voters the truth.

That is one of the reasons for what has happened in Rockland County.

Some Reasons Why Fire Losses Have Been High in Boston

SEVERAL very pertinent reasons why Boston has been suffering from unusually heavy fire losses are discussed in a detailed report on "The Problem of Fire Waste and Insurance Rates in the City of Boston," made to the Mayor recently by his Committee on Fire Insurance Rates.

Based on a survey conducted by Miller McClintock, Director of the Albert Russel Erskine Bureau, of Harvard University, the report presents so many valuable criticisms of general application that it should be of interest to all cities confronted with heavy fire losses.

Factors primarily responsible for the high fire loss in Boston are listed as faulty building construction, limitations of personnel of the fire department, ineffectiveness of the State Department of Public Safety, and negligence of individual property owners. The report says:

"Boston has already paid, and may yet pay more dearly, for the character of her buildings housing valuable stocks in the business portions of the city. Brick-walled buildings with wooden interiors are essentially furnaces, with the doors and windows potential draft openings. The report shows that most Boston dwellings have similar defects, and indicates that the serious fires which have been occurring in apartment houses have been due to the spread of flames through unstopped interior walls and up unprotected stairways and unenclosed vertical shafts."

In its present form, the Boston building code is declared to have a tendency to discourage improved types of construction and to stimulate the erection of the types of buildings now responsible for the city's bad fire record. The report finds that there is little incentive under the present code to erect good buildings and asserts that its lack of codification since it was first drafted in 1907 has been partly responsible for its having so long escaped the attention of public-spirited citizens interested in keeping Boston in step with improved building construction. No time should be lost in revising, rewriting and bringing up to date this fundamental vehicle of the city's physical progress, the report maintains.

It is specifically recommended that the code be revised in respect to the following major considerations:

"Arrangement of the code in logical sequence for the convenience of those governed by it; reduction of the permissable height of frame and unprotected wood-interior dwellings; provision of an intermediate type of light fire-resistive construction for appropriate occupancies; inclusion of definite egress requirements for all types of buildings."

Severe criticism of conditions which permit political interference with the Fire Department, as well as criticism of the entrance requirements, are found in the report. The average age of men in the Department was found to be 40 years—an average which the report declares to be too high. Recommendation is made that the maximum age limit for admission to the Fire Department be reduced from 35 to 25 years. Finding a lack of men with technical or engineering education, the report advises the establishment of a technical division in the Department, headed by an experienced and technically trained fire protection engineer, to be assisted by a staff of at least five junior engineers.

The technical division proposed would study the technical aspects of fires, maintain and analyze fire records, plan inspection work, develop new fire-fighting and fire-control methods, and conduct the research necessary to develop the Fire Department intelligently.

Defects also were discovered by the survey in the fire inspection work as conducted. It has been recommended, therefore, that 30 inspectors be added to the present staff of the Fire Prevention Division of the Fire Department and that, of the staff of 54 inspectors thus formed, 42 be assigned to an inspection patrol which would inspect carefully certain specific areas which have had high fire losses. It is further urged that these men inspect every building in the designated inspection areas not less than once a month and preferably once every two weeks, and that the inspectors be rotated from district to district.

PICTURES AND PARAGRAPHS FROM NEAR AND FAR

WAUSAU, WIS., SOLVES THE WINTER-TIME STREET-CLEARING PROBLEM

The method, as illustrated, is the use of a "Caterpillar Thirty" which, in partnership with a Wausau plow, roots up ice and snow, no matter how hard-glazed

THE PARK DEPARTMENT GIVES THE HIGH SIGN

Superintendent Robert E. Linnert, of Maplewood, N. J., has devised signs four feet square, and visible for several blocks, to inform residents in the neighborhood of the park skating-rinks that the ice is safe. The signs are of oilcloth, painted in red, white, and blue, and the letters are a foot high. They obviate many daily inquiries to the Police Department

Courtesy of Newark Evening News

A NEW TYPE SAFETY ZONE AT DETROIT

In use for over a year on Grand River at Bryden Street, it has won the epithet, "Too Tough to Hit." It was installed by the Police Department's traffic division

SAFETY BY ADMONITION

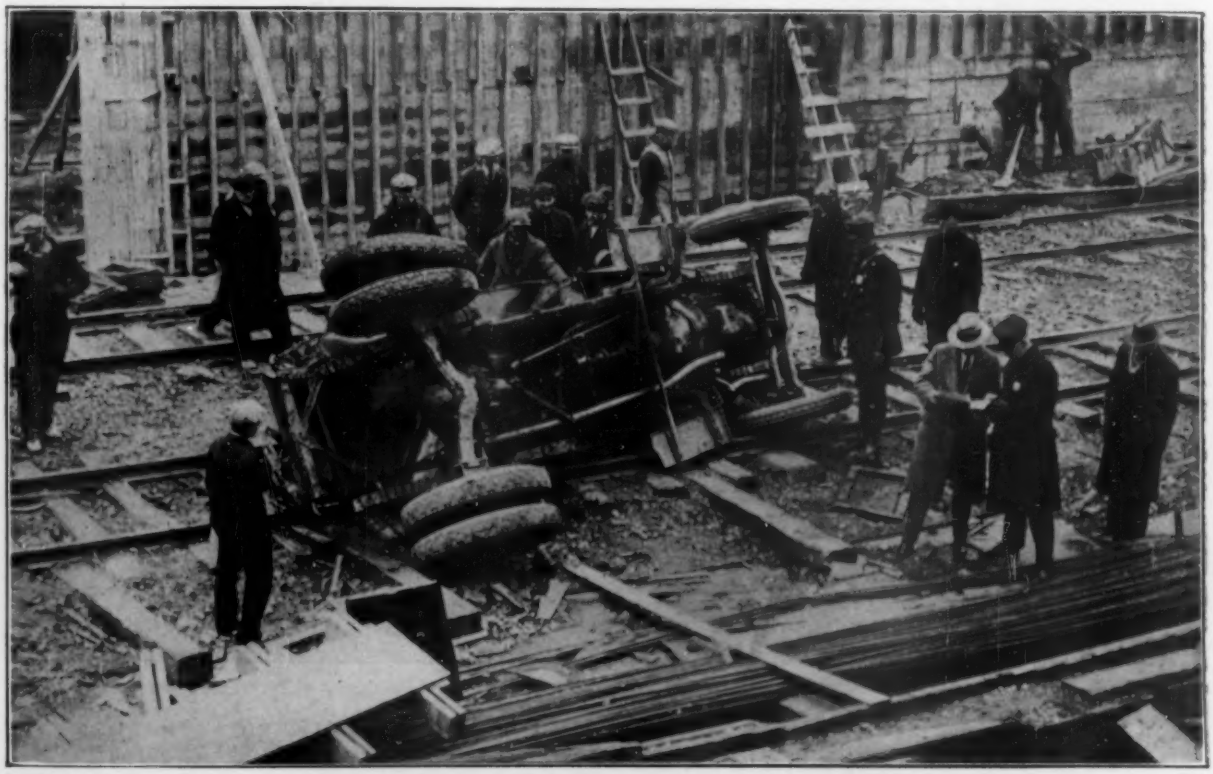
This is a Fatalometer, devised and in use in Rochester, N. Y. Let the public read in terms of human life and limb the cumulative day-by-day results of its carelessness on the streets, is the sentiment of the Rochester Safety Council and the Chamber of Commerce, which are responsible for the device

SAFETY THROUGH TRAFFIC CONTROL

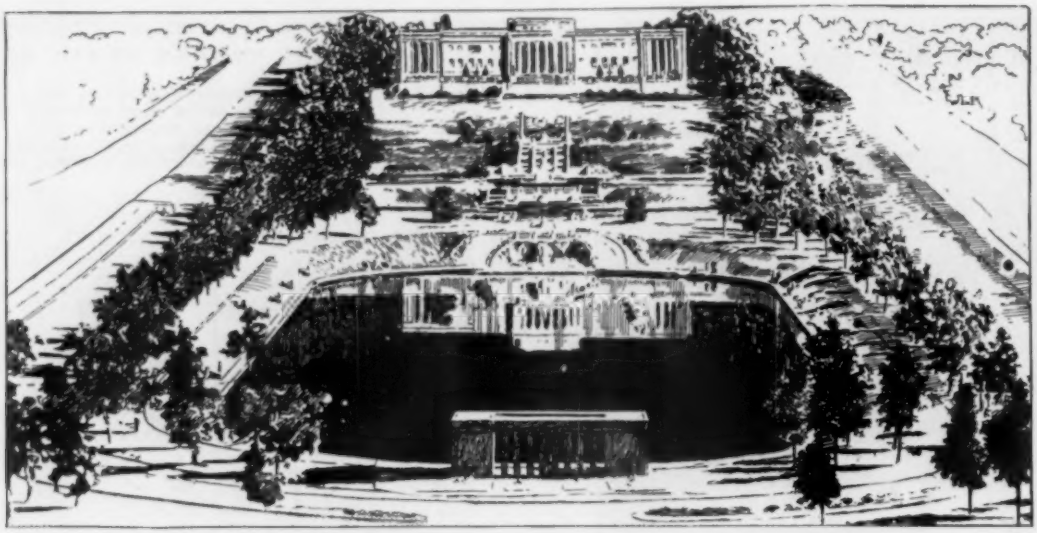
The National Safety Council has completed through street studies in 30-odd cities, of which Peoria, Ill., is one. For results and statements of the ways in which plans such as that shown promote community safety, see the January issue of this magazine, page 107

WHERE THE DRIVER WASN'T CAREFUL AND TRAFFIC WASN'T CONTROLLED

"Cause unknown" was the verdict. This truck, struck by a train at a grade crossing near a New Jersey town, was hurled fifty feet and overturned. The driver was critically injured and the truck wrecked



P. and A. Photo



Courtesy of the Christian Science Monitor

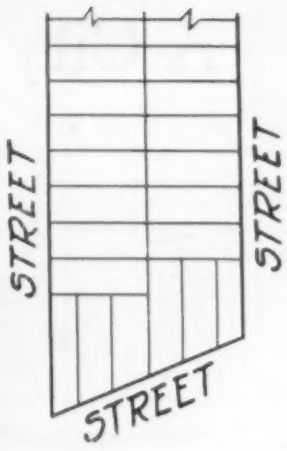
KANSAS CITY, MO., ACHIEVES THIS TREASURE

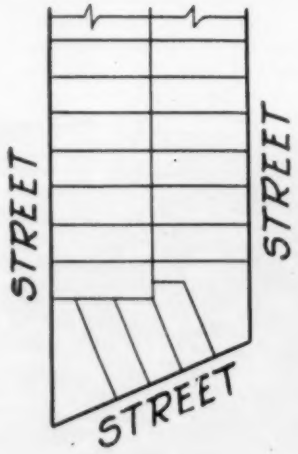
It is the proposed William Rockhill Nelson Gallery of Art, dominant feature of a $15,000,000 Art Center, soon to arise in the residential section, made possible through the will of the late founder and publisher of the Kansas City Star

Photograph from Atlanta Chamber of Commerce

IT IS BLOSSOM TIME NOW ALONG GEORGIA HIGHWAYS

And while most of the country remains in the clutches of cold weather, Atlanta is enjoying the recurrent annual miracle of pink and white beauty. Here is a glimpse of a two-mile stretch of peachtrees and dogwood along the two-motorway boulevard, Ponce de Leon Avenue





THE CINCINNATI CITY PLANNING COMMISSION ESTABLISHES NEW SUBDIVISION RULES

Among these are provisions for avoiding such staggered and out-of-focus effects as illustrated in the top arrangement. The illustrations below show the proper design for use of the same area: here uniform setback lines create a unified appearance, though the side lines are not at right angles with the sidewalk.

THE REDESIGN OF SEATTLE'S CIVIC CENTER INVOLVES WHOLESALE ALTERATIONS

Thirty-two blocks of hill are quietly pouring through a small hole 36 by 44 inches in size to enlarge and enhance the central area of Washington's capital city. Electric-driven shovels are biting away at the hill and depositing their mouthfuls in steel hoppers. The dirt falls on a moving belt which carries it to a bigger hopper, through which it drops onto a great conveyor, and it is rushed through an elevated timbered structure a half-mile to barges at the harbor edge for being conveyed out into the harbor and dumped.

A City's Welcome Door-Mat

Drawn for THE AMERICAN CITY *by C. D. Batchelor*

Government Helps Cities to Develop Airports

By

CLARENCE M. YOUNG

ASSISTANT SECRETARY OF COMMERCE FOR AERONAUTICS

PROGRESSIVE cities are determined to have adequate airports. They are arming themselves with authoritative facts and authentic figures which will aid them materially in obtaining suitable airport facilities. Many are making use of the cooperation offered by the Aeronautics Branch of the United States Department of Commerce.

The Branch publishes a number of bulletins on the subject of airports, and maintains a staff of airport specialists who travel over the country visiting cities desiring assistance in the selection of sites and wishing information as to the requirements for the development of suitable airports. This service, as well as the publications mentioned, is available without charge upon request to all American municipalities, civic organizations, and others interested in developing terminal facilities for air commerce.

One section of the Branch's Aeronautic Development Service devotes the major portion of its activities to this type of cooperation. Members of its personnel are routed throughout the United States on carefully planned itineraries, the usual procedure calling for the inspection of a number of sites, perhaps a talk before a civic organization at noon or in the evening, and a conference or series of conferences with officials interested in the development of airports and desiring information regarding the requirements of the airport rating regulations of the Department of Commerce. These specialists urge the importance of having experienced engineers make comprehensive studies and prepare plans for complete airport development, in order that every dollar invested in the project may be expended to the best advantage. It should be understood, of course, that the Department of Commerce representatives do not render this engineering service. During the past fiscal year the Government's traveling airport specialists have visited 636 different cities and delivered 251 addresses in municipalities interested in obtaining airports.

It should be noted, in this connection, that the Federal Government, through the Department of Commerce, is developing an extensive system of national airways over which commercial, military, and private planes may operate with safety. This system of airways, which bids fair to become in time almost as comprehensive as our national highway system, is being provided with a number of extremely helpful aids to navigation. Powerful revolving searchlight beacons, with flashing course-light projectors for indicating the direction of the airway, are being installed at 10-mile intervals. At 30-mile intervals, boundary-lighted intermediate landing fields are being established and equipped, with caretakers available night and day. United States air transport routes now total approximately 37,000 miles, of which nearly 12,500 miles are lighted for night flying. All of these airways and navigational aids, however, would be useless if we had no airports. Just as lighthouses and other aids to marine navigation would be of small value if there were no ports or harbors in which the ships could anchor and find shelter, and if there were no docks to which they could moor to load and unload their cargoes, so must airports be provided to link the airways together, to make the system complete and effective.

To this end those communities whose leaders have vision and initiative are establishing and equipping carefully designed, well-located airports which will afford adequate facilities for the comfort and convenience of the public and for the safe and efficient day-and-night operation of aircraft, and are providing for expansion to meet the rapidly increasing need of commercial aeronautics. Such communities will naturally be the ones to attract air commerce and its accompanying industries.

The Federal Government, feeling certain that within the next few years of flying the public will be enjoying a thoroughly satisfactory, full organized, well-equipped transportation service over a system of airways so comprehensive that it will link practically all the important cities in the country, is leaving no stone unturned in its efforts to bring about a combination of (1) airworthy aircraft, adequately equipped and efficiently maintained, (2) flown by competent pilots over (3) suitably equipped airways (4) in conformity with standard air traffic rules. It is obvious, however, that any city which wants to obtain the fullest possible realization of the many benefits certain to accrue from air commerce, can secure them only by providing adequate airport facilities.

The expert assistance which the Aeronautics Branch of the Department of Commerce is able to render to municipalities is outlined in the accompanying article, prepared by Major Young at the request of the Editor of THE AMERICAN CITY.

Since time immemorial, transportation has been a vital necessity to the economic welfare of every city. Without it, today's civilization would be impossible. All of us are dependent upon it each day of the year—for the food we eat, the clothes we wear, and a thousand and one other things that enter into our daily lives. Because improved transportation is a crying need of virtually every private and corporate enterprise, because it is absolutely necessary that we move mail, express, and passengers with the least possible delay, one of the major problems of civilization consists of shrinking the map and expanding the clock. Not only must transportation facilities be provided which will annihilate distance, but they must also add additional minutes to every hour of the day.

Every community is dependent upon transportation, not only for connections with its back country, but also for connections with other centers of population. Steamboats, railroads, automobiles, and aircraft all have irreplaceable rôles in our general transportation system. Obviously, aircraft offer advantages not provided by the older and slower transport medium. Not only can they travel at greatly increased speeds, but they also permit the use of straight-line routes.

Not only are surface distances frequently 50 to 100 per cent greater than air-line distances between two cities, because of intervening topography; but the airplane offers more than 100 per cent speed increase over the fastest surface carriers. For purposes of comparison, consider for a moment the relative speeds of the different transportation mediums. The average cruising speed of an airplane is 100 miles per hour, as against 45 miles for fast passenger trains, 30 miles for local passenger trains, 25 for automobiles, 22 for motor busses, 22 for fast ocean liners, and 15 for ordinary ocean liners.

Despite the fact that the fastest surface transport requires 102 hours to complete the journey from coast to coast, a letter can now be mailed in New York after 5:00 p. m. and be delivered in Los Angeles or San Francisco in the first delivery of the second day—losing only one business day for a trip across the continent.

Air transport, business aviation, commercial aeronautics, are here and here to stay; but how fully they can serve any community depends largely upon the leaders of that community. The Federal Government will cooperate in every possible way, but the future of flying in any particular city depends largely upon the people of that city.

THE BUSINESS CENTER HAS A SPACIOUS PARKING PLAZA

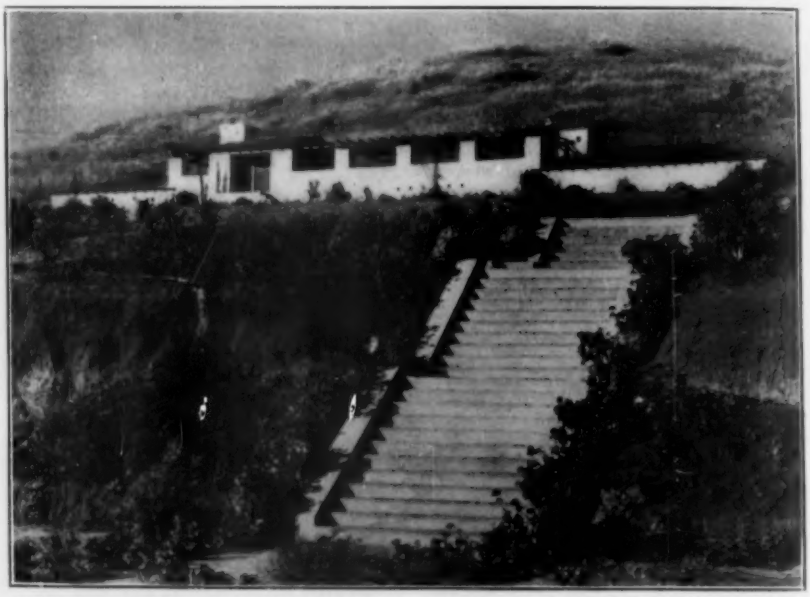
A New Town De Luxe

By

CHRISTINE EMERY

OLE HANSON, during the turbulent days when he was Mayor of Seattle, sighed for a city that would afford an ideal environment for his home life. Later, after extensive exploration, he found an appropriate site—a strip of hilly pasture land five miles long, fronting the Pacific Ocean and located halfway between Los Angeles and San Diego. In December, 1925, he announced the proposed development here of the city of San Clemente.

Today, four years afterward, this uniquely developed new municipality, with all the colorful charm of a Mediterranean city, has a Mayor, a City Council, Police and Fire Departments, paved streets with distinctive tile sidewalks, ten miles of highway frontage, electric light, heat and power, ornamental street lighting, extensive lanes of landscaping, and trees in front of every lot. It has also a municipally owned water system capable of supplying the needs of upwards of 50,000 people. Public health is safeguarded by a $300,000 sewage system, and there is a $100,000 hospital.



THE WATER PLANT NESTLING AGAINST A HILLSIDE IS OFTEN MISTAKEN FOR A PRIVATE HOME

Under municipal ownership, and outright gifts from the founder, are several small park areas, five miles of beautiful, smooth, sandy beach adequately protected against commercial encroachment, a $75,000 schoolhouse with a large auditorium opening on a Spanish plaza three-eighths of a mile in circumference, a $100,000 Community Club house, and a $100,000 Beach Club. These are both appropriately furnished and equipped, as is the magnificent 60-acre golf course, and the new Golf Club. A fishing pier has been erected at a cost of $50,000.

San Clemente is primarily a community of beautiful and carefully safeguarded homes. All architecture must be Spanish developed in white stucco with red tile roofs. Monotonous uniformity is avoided, however, through the great variety of individual home designs.

San Clemente, a "one-man" town, is now a flourishing center of cosmopolitan life.

A GLIMPSE OF THE SCHOOL AND ITS PLEASANT SURROUNDINGS

Building the St. Hubert Airport Near Montreal, Quebec

Runways Built of Bituminous Macadam Using Emulsified Asphalt

ST. HUBERT AIRPORT BEFORE IMPROVEMENT

THE St. Hubert Air Harbor is located about ten miles from Montreal General Post Office, via Victoria Bridge, and four miles from Longueil on the Chambly Road. It is also close to the Canadian National Railway Company's station at St. Hubert, which adjoins the airport.

The property consists of approximately 975 acres and has an additional area available for further expansion. The original site, which is very level and sufficiently removed from adjacent hills to provide maneuvering space for large dirigibles of the Zeppelin type, was selected principally as a site for a modern mooring mast for the R-101, which is still undergoing tests in England.

Realizing the present need for accommodations and landing fields for airplanes, the Department of Public Works of the Canadian Government decided to develop this property as a modern airfield which would take care of all types of air craft both for present requirements and for some time to come. Therefore, after the mooring mast, which is now complete except for minor adjustments, and its necessary accompaniment of buildings, etc., were well under way, plans were prepared for the present development of runways, taxiway and hangar facilities on which contracts were let during the summer of 1929.

Layout of the Port

The layout as planned consists of three runways radiating from a central point at angles of 120 degrees to take care of all wind directions. These runways are 150 feet in width and from 1,800 to 2,000 feet in length. A taxiway 100 feet wide connects the outer ends of runways 2 and 3 and will eventually encircle the whole field to connect with the terminus of runway 1. The angle of No. 1 and 2 runways forms a space for the dirigible mooring mast with its surrounding anchors. The hangars, garages, shops and demonstration buildings are distributed along the taxiway.

Construction of No. 1 and 2 Runways

The work let under the first contract called for the construction of the No. 1 and 2 runways and 2,120 feet of the 100-foot taxiway only, together with the drainage, grading, etc.; also, a quantity of penetration macadam roads and areaways surrounding buildings, garages, etc. The remainder of the taxiway and the construction of No. 3 runway are to be built during 1930.

QUANTITIES CALLED FOR UNDER CONTRACT

Filling the ditches	100 linear feet
Drain sewer pipes	11,364 " "
Drain junctions	31
Draining wells	4
Stone drains	4,422 linear feet
Grading	107,173 square yards
Lower course of foundation for waterbound macadam	13,228 " "
Upper course of foundation for waterbound macadam	13,228 " "
Waterbound course of pavement	13,228 " "
Surface treatment of roadway	30,117 " "
Surface treatment of shoulders on roadway	11,330 " "
Lower course of foundation for bituminous taxiway, runways and paving	91,605 " "

ST. HUBERT AIRPORT WITH PARTIALLY COMPLETED RUNWAYS

LOOKING DOWN NO. 2 RUNWAY

Upper course of foundation for bituminous taxiway, runways and paving	91,605	square	yards
Penetration course for bituminous taxiway, runways and paving	93,000	"	"
Shoulders of runways and taxiway	3,360	"	"

IMPROVEMENTS TO MACADAM ROADS ALREADY BUILT

Repairing surface with asphalt cold patch	1,440	square	yards
Completion of actual roadway			
Culverts (corrugated galvanized iron pipe), 42-inch, gage 10	400	linear	feet
Culverts (corrugated galvanized iron pipe), 18-inch, gage 14	500	"	"
Culvert, concrete connection	1	"	"

Emulsified Asphalt Replaces Hot Asphalt

The original specifications for the bituminous penetration work on the taxiway and runways called for the use of asphalt, necessitating heating, but the contract contained a clause allowing alternative materials to be used, subject to the approval of the Department of Public Works.

The contractors, Dibblee Construction Co., Ltd., 26 Victoria Square, Montreal, after close study of the bituminous materials available for the penetration work, decided to use Colas, an asphalt emulsion which had been in use in England, Germany, France and other countries for some years and which is now being manufactured in the United States by Flinkote Road Inc., and in Canada by Flinkote Roads Ltd.

Several factors contributed to this decision: no heating was required; the material was the same temperature as the stone; its fluidity enabled more thorough penetration with closer consolidation of the stone aggregate; and its ability to coat wet stone saved time ordinarily spent in waiting for penetration stone to dry out. This was a big factor, as the penetration work was scheduled to be done during September and October, months in which a considerable rainfall usually occurs. The ability of the material to stand rolling for several days after being applied, thus eliminating rough spots and making possible a truer surface, were also important factors.

The Department of Public Works, after investigating and testing Colas, approved its use for this project. The contractor accordingly arranged with Flintkote Roads Ltd. for the supply of Colas with a strict schedule, the surface treatment to be started on September 9 and penetration to commence on September 16 and to proceed at a rate of application of 6,000 gallons of emulsion per day.

Underdrainage

Because of the flat nature of the terrain, drainage was a serious problem. Considerable sums of money had been spent prior to the starting of the contract on a system of main drainage lines designed to take the excess water from these fields, conducting it to the regular main highway drainage system.

In an endeavor to keep the water from accumulating under these new paved runways, approximately 12,000 feet of 6-inch drain tile, 5,000 feet of stone drains, 400 feet of 42-inch iron culvert, 500 feet of 18-inch iron culvert, four draining wells and the necessary drain junctions, were provided.

Use of Cross Tiling

During the construction period, however, it was found that these quantities had to be increased at some points to take care of unusually severe conditions. Cross tiling under runways, using the 6-inch tile, also broken stone drains, were added where needed. In a general way the drainage of the runways and the taxiway is accomplished by means of cross tiles, connected with longitudinal drains, placed parallel to runways under the shoulders for the full length and on both sides. These connect with large-sized concrete draining wells at convenient points, which, in turn, are connected to the larger drains of the system, previously constructed, conveying the water out to ditches on the main highways. Considerable care was taken in placing the 6-inch tiling to insure a solid foundation in the bottom of the trench and in backfilling the ditches, with clean stone and gravel. The use of the draining wells system enables the engineers to ascertain whether the draining system is functioning properly.

Preparation of Subsoil

The subsoil at the airport consists of clay. Grading and the preparation of the runway was carried out by turning over the soil with horse-drawn graders and wheel scrapers, the surplus earth being removed to various parts of the airport and leveled in place. The subgrade was thoroughly rolled with a steam roller weighing 12 tons, until completely compacted and true to the contour of the finished taxiway or runways.

Foundations for Bituminous Taxiways, Runways and Roads

The specifications for foundations provided for a layer of cinders which would, upon rolling, consolidate to a thickness of 6 inches with an alternate for the use of crushed stone or gravel. The material finally used consisted of a layer of coarse, clean gravel, not more than one-third passing a ¼-inch screen. This gravel seemed to bond very readily and was dumped on the prepared subgrade from the trucks and spread into place to a uniform depth of 6 inches, the spreading being done by means of horse-drawn graders. It was then watered and rolled and thoroughly consolidated. Upon this was spread a 4-inch layer of good-quality limestone of a fairly uniform size of about 4 inches. This was also dumped by truck and spread with the horse-drawn graders. After being graded to the contour of the finished runway, it was successively watered and bound with limestone dust and rolled with a 14-ton roller until consolidation was complete.

The Penetration Course

Upon this foundation a layer of hard limestone was spread, 60 per cent of which was 2-inch stone, 20 per cent 1½-inch stone, and 20 per cent ¾-inch stone. The quantity used was sufficient to consolidate to 3 inches, and was dumped by truck and spread and leveled by horse-drawn graders. This mixture of stone was selected and mixed at the quarries in the specified proportions, so that it would pack and consolidate with the addition of as little chinking stone as possible.

Prior to the spreading of this course of stone upon the macadam foundation, a thin layer of dust was spread evenly over the whole surface, additional fines being placed where necessary.

After spreading and leveling, the course was rolled first with a 12-ton 3-wheel roller and later with an 8-ton tandem roller, some water being used

during the rolling operations. The water and the surplus dust combined to secure a tight, solid bottom for this course. It was then found that, because of the haste necessary in carrying out this contract, the macadam base had not set quite so hard as it would have, had there been more time between the construction of the foundation and the laying of the penetration surface course. Therefore, the use of the tandem roller was very beneficial in eliminating waves and ruts that developed under the heavy three-wheel type roller.

Applying the Emulsion

After this rolling, the application of Colas was made with a pressure distributor tank truck at a rate of 1.3 Imp. gals. per square yard. The work was carried out in 10-foot strips, starting at the outside edge of the runway and working parallel to its length. The strip was measured to take the full distributor tank load of asphalt emulsion at the proper rate of application.

For chinking this course, ½-inch hard limestone chips, almost white in color, were supplied. These chips weer distributed in small heaps along the prepared 10-foot-wide strip before spraying, in such a manner as to be readily available to the chip spreaders. Immediately after the passage of the distributor truck, a crew of nine or ten men spread the piles of ½-inch chips evenly over the penetrated strip, leaving the way clear for the finish rolling and penetration of the adjacent strip. Immediately after the application of the ½-inch chips, the strip was thoroughly rolled, the work being continued in this systematic manner until the completion of No. 1 runway.

Second Application

In between times back rolling was done, the roller being equipped with a 10-foot street broom in the rear, which distributed the chips evenly. After the lapse of a few days, Colas was again distributed over the area in the same manner as described above, this time using 0.7-Imp. gal. per square yard with ⅜-inch chips of the same quality as the ½-inch chips. The spreading of the smaller chips was followed by immediate rolling, as in the previous application, the tandem roller running back occasionally while further work was in progress, to take out all depression waves, leaving the surface true and free from short waves of any description. The runways have a crown of ⅛-inch per foot, and the taxiway a uniform slope of ⅛-inch per foot.

About 20 pounds of ½-inch chips were used per square yard for chinking the first application, and 15 pounds of the ⅜-inch chips for the second application.

No. 1 Runway Quickly Subjected to Heavy Traffic

The No. 1 runway was completed only two or three days prior to the visit of the Ford Reliability Air Tour, but its use by a group of nine army fliers from the United States did not show any damage from tail skids.

Both the contractors and the Government engineer were well pleased with the results obtained. To thoroughly complete the work, however, an additional seal coat of 1/3-gallon per square yard is to be made early in the spring of 1930.

The first part of this work was sprayed by a Flintkote Roads distributor mounted on a Leyland chassis and using air pressure. The rest of the penetration work was done by Jon. Elie Limitée, using a Kinney distributor. Both of these outfits proved entirely satisfactory.

The total square yardage of the penetration type wearing surface on the runways, taxiway and space around hangars, etc., is approximately 90,000 square yards, in addition to which some of the surface treatment at a rate of 1/3-gallon per square yard was carried out, also a reconditioning of the road leading from the mooring mast to the county highway. Altogether, 183,000 Imperial gallons, or 220,000 U. S. gallons, of Colas were used in this project during 1929.

Reconditioning the Macadam Road to the Mooring Mast

The road which leads from the county highway direct to the mooring mast is approximately 1,000 feet long and 20 feet wide. It was an old piece of macadam construction with badly raveled sides. The road was almost completely worn away, leaving a high ridge down the center with an occasional knob of stone projecting.

The repair of this road was accomplished by spreading a 6-foot strip of 1-inch stone down each side to a sufficient depth to restore the contour of the road, followed by an application of Colas at the rate of ½-Imp. gal. per square yard, covering with ⅜-inch stone chips and then rolling. The entire surface of the road was then covered with a layer of ¾-inch stone graded into shape with a horse-drawn grader and rolled, followed by the application of Colas at the rate of 1/3-gallon per square yard. This was then blinded with ⅜-inch chips and another light application of the asphalt emulsion, approximately ¼-gallon per square yard, was made. This was covered with ⅜-inch stone chips and the whole thoroughly rolled. The road as completed and after being under heavy traffic consisting of trucks transporting machinery, sand, gravel, broken stone, etc., presents a substantial appearance. Its construction was accomplished at a minimum cost by utilizing the old macadam foundation. This road work was completed November 5, 1929, five weeks after the fall rains had begun.

Crushed Field Boulders and Limestone Used

The 4-inch crushed stone used for the upper part of the foundation course on this job was quite varied in character, some of it being derived from field boulders hauled in by local farmers and crushed in a portable crushing plant on the field. Part of the material was trap rock hauled by truck about 18 miles from quarries on a mountainside near St. Hubert. All of the limestone used in the penetration course, however, was shipped in from the quarries at Jolliette, Quebec, and was of a uniform, standard quality. About two Imperial gallons of the asphalt emulsion was used per square yard for penetration.

DIRIGIBLE MOORING MAST, AT JUNCTION OF RUNWAYS NOS. 1 AND 2

Wholly Smoke!

By

CHARLES W. PERSON

■

"GOOD evening. This is Station M-O-G in Smogton. We open our program with an address by Hon. Ezra Sneezer, well-known philanthropist, who is noted for his independence of thought on the leading public issues of the day. Mr. Sneezer."

"Ladies and Gentlemen: Ever since I came to Smogton I have listened to the ballyhoo and poisonous propaganda of the anti-smoke racketeers. They would have us believe that soft-coal smoke is ruining the good name of our fair city, sapping the vitality of our citizenship and burdening each inhabitant with a needless expense of at least twenty dollars a year.

"It is high time for some red-blooded citizen of Smogton to brand these accusations as bunk and say a good word or two for smoke and its contribution to civilization. I willingly accept this responsibility. I am aware that I am the first person to step forward and defend smoke as a heaven-sent blessing in disguise. When I return from my customary winter pilgrimage to Florida, I shall resume this series of talks.

Keeping the Doctors Busy

"Now, my friends, let us give this subject some calm reflection. Consider, for example, the hospitals, the doctors and others who stand ready night and day to minister to our needs. What would happen to these great public servants if the wild-eyed enemies of smoke had their way? The hospitals, relieved of eye, ear, nose and throat cases, would soon find it impossible to operate on their present levels of efficiency. Doctors would leave Smogton in droves. No more throats to be sprayed, cut and operated on; no more noses to be explored and excavated. Think what would happen to the druggists and to the industries which supply the druggists!

"Yes, think of the cleaning establishments, beauty parlors, laundries and our great department stores. What would happen to these if the smoke crusaders had their way? They would be driven headlong into bankruptcy. Our draperies, furnishings and clothes would last for years. So would our complexions. There would be no necessity for renewing anything. Millions of dollars would be saved, hoarded and taken out of circulation. Cleanliness, arch enemy of our industrial prosperity, would quickly drive this country to the dogs.

"Consider another side of the picture. The other night, from the vantage point of my front porch, I looked off into the distance. Thin spirals of rich, luscious smoke wafted their way heavenward from the chimneys of humble homes. I recalled that famous admonition: 'There is nothing either good or bad but thinking makes it so.' All at once these spirals of smoke took on a beautiful and sacred significance. From whence did they come? From homes. But what kind of homes? Happy, peace-loving homes. Each ribbon of smoke meant a full coal-bin—a comfortable fire, a happy family group, contentment, bliss.

Preserving the Home

"I thought of the breadwinners in those homes. They had labored hard to provide the coal to make that lovely smoke, so emblematic of all that is civilized in life. Brave men, every one of them—the cream of our manhood. And yet the anti-smoke gangsters would break into those homes, put out the fires and leave entire families to die from the cold. Talk about sabotage!

"Why is it that our political leaders do not see this? Why are they so slow in understanding that the objective of these smoke abaters is the destruction of civilization itself? I'll tell you. The insidious propaganda of the anti-smoke fanatics has sapped the initiative of our leaders. They are like so much pliable dough in the hands of these smoke-fighting opportunists. It is high time that some champion of the people's rights comes forward and says to these would-be destroyers of everything we hold sacred:

" 'There are several trains leaving Smogton each day for the smokeless deserts of dear old Arizona. Pick your train, and get out within twenty-four hours. There is room in Smogton only for those who will give smoke a square deal.'

"A proclamation like that would be heard round the world. It would make political fame for the man brave enough to deliver it.

"And how about the cultural and architectural advantage of soot? The enemies of soot would have us believe it is ruining our monuments and buildings. Ridiculous! Multitudes of Americans visit Europe each year to absorb something of the ripe old age and culture of the countries of the old world. They fairly worship the soot-drenched cathedrals and other show-places made mellow by smoke. Artists get all excited about the irresistible beauty of London's smoke fogs. They paint pictures of it, and the new and gullible rich in America buy them. How perfectly childish it all is!

The Artist's Haven

"Right here in Smogton we offer the artist everything available in dirty London. We offer him everything available in dirty Europe, dirty Asia—dirty anywhere. And what's more, any American artist can come here without getting seasick.

"Thanks to atmospheric smut, our buildings have been given age and dignity. Showers of soot have converted them to the semblance of some ancient or medieval settlements. With commendable Yankee efficiency we have acquired the appearance of age and culture without the pangs of history. It is something of which to be proud.

"Our smoke and soot are the equal of any anywhere. Why not stand up like proud men and women and tell the world about them? The only ones who won't believe us are the half-cracked smoke abaters right here at home, but they don't count."

Telegrams Received by the Hon. Ezra Sneezer:

"Congratulations your fearless expose of campaign of perfidy of antismoke crowd
Associated Boosters"

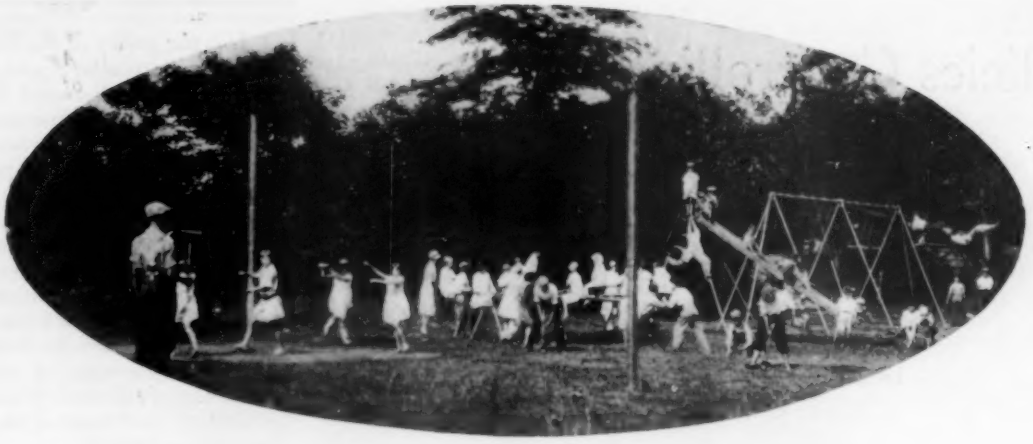
"Thank God Smogton has in you a real Booster
Madame Cleo Beauty
Salons, Inc"

"You are a fine bird to boost smoke and run off to Florida to spend your winters
See-Smogton-First Committee"

"Splendid radio talk forward manuscript for pamphlet distribution by this association
Amalgamated Order of Cleaners Washers and Scrubbers"

"Fathead
Smokeless Fuels Corporation"

"Bully speech have scheduled you for usual talk on Florida sunshine next month regards
Orangeblossom Chamber
of Commerce"



How Recreation Was Sold to Knoxville

By JOHN M. HIGHTOWER

THIS is the story of recreation in Knoxville and how it grew, under direction of Nathan L. Mallison, from a $13,000 program in 1927 to a $45,000 program in 1929.

When Mr. Mallison came to Knoxville as Superintendent of the Bureau of Recreation, on May 1, 1927, he entered an office that had been vacant for six months. No one in the city expected recreation work to be carried on except during the summer season. There was a total of possibly $8,000 available, representing the balance of a $13,000 appropriation. There was no staff, and no trained workers were available. Moreover, the new executive could not expect support for the kind of program he had visualized until he had "sold" his plan and his ideas to the people.

Newspaper publicity appears in retrospect to have been the most effective medium through which this was accomplished. Other media successfully used later were posters, bulletin boards, movie news reels in local theaters, and the personal contact of the department employees with the public. "Selling an idea to a municipal population is like selling an article to an individual," in Mr. Mallison's own words. "You have to talk fast and intelligently; you have to say something worth being listened to; and you have to show results for your product. Fortunately, results, that is, what we were actually doing, constituted an increasingly large volume of local news, thus giving us publicity of an amount and kind to result in more cooperation from citizens and public officials and, in turn, in an increased budget."

As the first step towards putting new life in the dead office, a Playground Directors' Institute was organized in which 48 undergraduates of the University of Tennessee, located in Knoxville, were enrolled. From the six-weeks training course given these students, a group of skilled and capable play leaders resulted. These leaders and others trained by them have constituted the staff ever since.

There were fifteen members on the staff the first summer, twelve acting as leaders for the twelve playgrounds, and three as district supervisors. Before the first playground was opened, every member of the staff was given a complete schedule of summer activities. This schedule was developed with the idea of its efficiency in keeping every child occupied, off the streets, and away from loafing places, and in furnishing some recreation for adults as well. In this schedule, activities were of city-wide and interplayground, intramural, and routine nature, and were planned to cover a period of eleven weeks. The little girl who might want to make doll clothes was given consideration, as was the young man tennis champion, and those with a wide range of other interest besides. The 1927 program for Knoxville's play was, in fact, selected by the Playground and Recreation Association of America as a model, and 14,000 copies of it were distributed by the Association to recreation officials all over the country.

During the first year playground activities were stressed as a matter of policy. The people were enthusiastic about playgrounds, and by maintaining this enthusiasm the Bureau of Recreation received publicity that was almost spectacular. The activities of the Bureau were given more space in the local papers than any other subject except Lindbergh. The following year the appropriation was increased to $21,000. And when the 1929 budget calling for expenditures totaling $45,000 was submitted, it received prompt official approval.

As more money was made available, larger sums were spent for construction, and the program was broadened to include a number of year-round activities. One of the most successful of these has been the craftwork department. This department has a model airplane section in which keen interest has been sustained since Lindbergh's ocean flight. This section has claimed more column inches of news space and has attracted more favorable comment than any other Bureau of Recreation development. Boys building model airplanes have in the past two years won 29 medals in national meets. Basketball, diamond ball, and volley-ball have contributed to the upbuilding of a strong year-round program. There are now 72 basketball teams sponsored by the Bureau where only 12 existed before.

Industrial recreation has been featured, with thousands of noon-hour and after-work recreation periods conducted on regular schedule at mills during the past year. In the winter months this work is principally of a social character, and, is conducted in the aisles of the plants; when the weather permits, mass games and low organization games are played out of doors.

As a result of the outstanding success of his work in Knoxville, and of his ten years' experience in the organization and conduct of such programs, Mr. Mallison has been called to Jacksonville, Fla., where he occupies a position similar to that in Knoxville. The program which has been described, however, has been built with the idea that it will expand and progress to meet the developing needs of the city.

Policies Controlling Water-Supplies from National Forest Areas

By PRESON P. PHILLIPS
DESIGNING ENGINEER, GILBERT C. WHITE CO., DURHAM, N. C.

It is the policy of the Department of Agriculture, which has charge of all National Forest areas, to fully utilize and develop all forest resources, consistent with watershed protection and timber production, for which such forests were established. It considers the use of these areas for public water-supplies one of the most important uses to which they can be put. This article describes a typical example of the application of this policy, and the essential conditions of the regulations adopted.

THE Pisgah National Forest comprises approximately 275,000 of heavily forested mountains in the western portion of the state of North Carolina and the eastern portion of the state of Tennessee. These mountains, having an annual rainfall of about 60 inches, are the source of many streams, the drainage areas of which are protected by the sanitary and fire protection regulations of the Forest Service and are also systematically reforested. They therefore offer ideal sources of water-supplies for cities near enough to make use of them; furnishing an unusually pure, cold, mountain water which can usually be delivered by gravity and needs no filtration.

The Hendersonville Supply

Hendersonville, the county-seat of Henderson County, is located on a plateau just west of the Blue Ridge Mountains of North Carolina, at an elevation of 2,200 feet above sea level. The normal population is about 10,000, but this increases during the tourist season to more than 20,000; it is estimated that this city takes care of more than 50,000 tourists during the summer season.

The original water-works for Hendersonville, consisting of a small reservoir fed by streams, was constructed in 1888. This proving inadequate, it was replaced in 1918 by a small filtration plant treating water pumped from a small stream near the town. In 1921 this supply was found to be much too small, and the Gilbert C. White Co. was employed as consulting engineers to make recommendations for a new supply and to design and supervise construction. Investigation proved that the most logical place for the city to get its water was from the North Fork of Mills River, just below the junction of Big Creek and Fletcher Creek, and about 16 miles from the city. The drainage area at this point was 10½ square miles, all of this being within the Pisgah National Forest. The intake dam built at this point impounded 5,000,000 gallons at an elevation of 2,450, and 16 miles of 16-inch cast iron pipe was laid to a new distributing reservoir built within the city at an elevation of 2,335, about 200 feet above the business district of the city. This distributing reservoir also had a capacity of 5,000,000 gallons. The normal capacity of this creek and pipe line was estimated at 2,180,000 gallons per day, with a minimum dry-weather flow of 1,120,000 gallons per day, and it was estimated that this should take care of the city for a period of five years.

Regulations Governing Supply

This water-supply being entirely within the Pisgah National Forest, as was also a good part of the pipe line, it was necessary for the city to obtain from the Department of Agriculture permission to take water from the creek, build a dam and lay the pipe line. Such a permit was obtained in May, 1922, to include also Wash Creek on North Fork, and Bradley Creek on South Fork, of Mills River.

The essential conditions of this permit obtained from the Department of Agriculture were as follows:

"1. All regulations governing the Forest and Game Preserves must be complied with by all employees of the city; and all sanitary regulations proposed by the city in accordance with the laws of the state of North Carolina must be observed.

"2. Grazing of domestic animals, camping, and construction and occupation of buildings not needed by the city or the Forest Service for the protection and administration of the land will not be permitted.

"3. The Secretary of Agriculture agrees to allow no timber to be cut or removed that would hurt the water-supply, and to extend and improve the forest upon this land by seeding, planting, etc.

"4. The city agrees to cut and remove no timber from the water-supply area without permission of the Forest Service, and to pay for all timber removed with permission.

"5. The city is given permission to build a fence around the exterior boundaries of the land, providing gates are left at points to be designated by the Forest Service for their use, so as not to interfere with their care and inspection of the property.

"6. The city agrees to protect and repair all roads, trails and other forest improve-

THE 5,000,000-GALLON DISTRIBUTING RESERVOIR WITHIN THE CITY

ments during the construction of its dam and pipe line if used by them.

"7. The city agrees to pay to the Department of Agriculture the sum of $750 per year for the use of the 10½ square miles of Government land within the watershed of Big Creek and Fletcher Creek; and the sum of $220 per year for the 2.75 square miles at the head of Wash Creek; and $430 per year for the 6.0 square miles at the head of Bradley Creek. The payments for Wash Creek and Bradley Creek not to begin until the city has started to use this property. In addition to the above, the city is to pay the sum of $5 per mile or fraction thereof for the land used for the pipe line right-of-way.

"8. Readjustment of annual rental is to be made at the end of 30 years and every 20 years thereafter, the amount of increase in rental not to exceed 25 per cent of the previous period, but the Forestry Service to have the right to add 3 per cent interest on the value of Forest products the sale of which was prevented by this contract.

"9. The city may not transfer its rights and interests except with the consent and approval of the Secretary of Agriculture, who at such a time has the right to revise this agreement."

The intake dam on Big Creek and the 16-inch pipe line to the distributing reservoir in Hendersonville were completed in January, 1924. The water obtained was pure and required no treatment, but a chlorinator was installed at the distributing reservoir and the water was chlorinated as it passed into the distributing system.

Extension of System Needed

Between January, 1924, and the latter part of 1927, the consumption of water in the city of Hendersonville increased over 300 per cent, and the city again found it necessary to increase its water-supply. On the advice of the Gilbert C. White Co. it was decided to use the watershed area of Bradley Creek, but in view of the fact that the population was increasing so much faster than had been anticipated as natural, they decided to request the Department of Agriculture to increase the watershed area allotted to them on this creek from the original 6.0 square miles to a total of 10.9 square miles, which necessitated a new agreement with this Department, which in the meantime had revised its code for such a permit. The essential conditions of the new contract were as follows:

"1. Permit is issued for the city to use all areas required free of charge under the authority of Regulation L-2 (h) of the National Forest Manual.

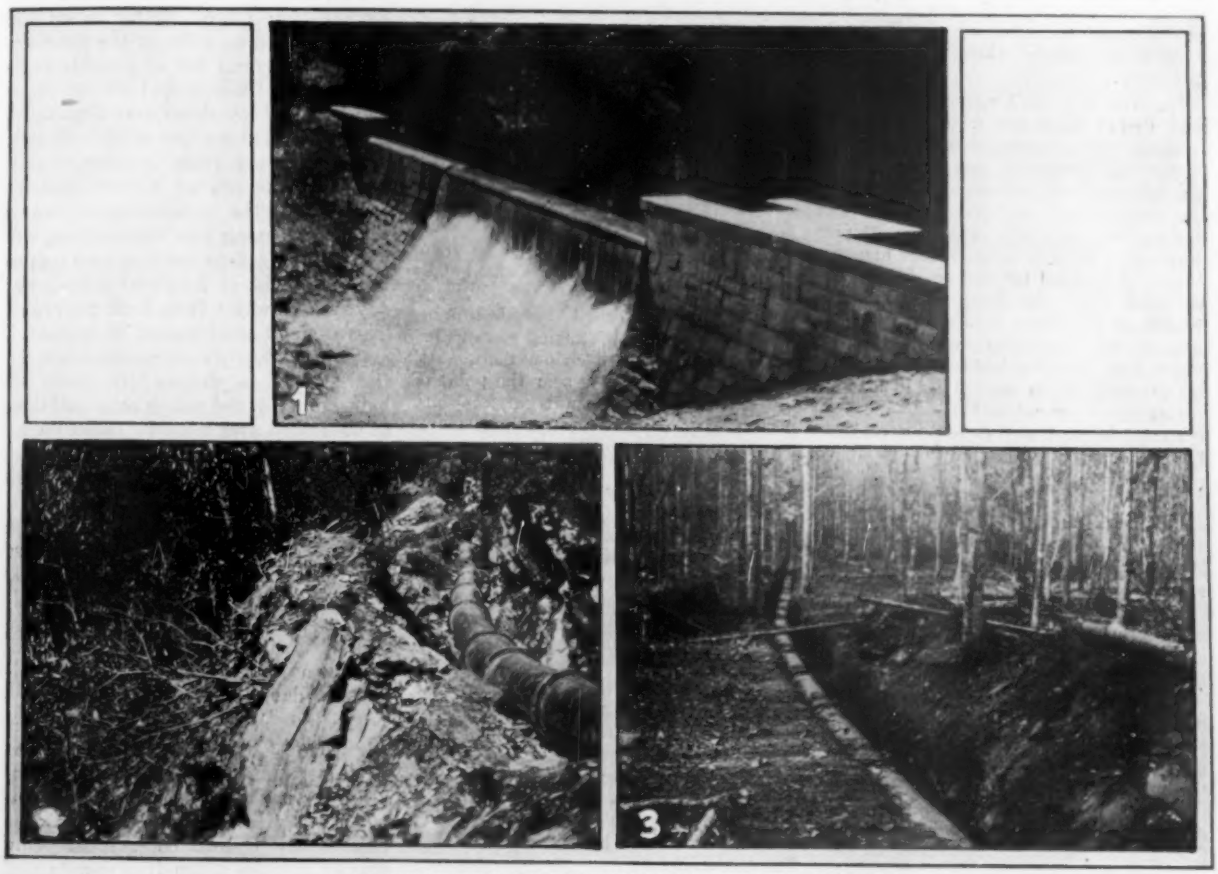
"2. The city has the right to use any or all of the water in these watersheds over which the Department of Agriculture is vested with authority, but is not granted the right to take water as against any riparian owner other than the United States of America.

"3. The Secretary of Agriculture reserves the right to require the city of Hendersonville to allow any adjacent community to obtain water from this source of supply upon such terms as he considers reasonable, provided that there exists a surplus over and above the needs of the city, and provided that no other sources of water-supply are available to said community at a reasonable cost, and provided that these adjacent communities will be allowed to use this surplus water only so long as such surplus exists.

"4. The intent and purpose of this permit is to provide for the complete and orderly development and use of the watershed by the city in successive stages as needed, following the detailed plan of development adopted by the city. As a general rule, the following requirements will be met by the city:

"a. The present storage system and pipe line on the North Fork of Mills River shall be kept in readiness for use at all times.

"b. A 20-inch pipe line from the point of diversion on Bradley Creek shall be laid to intersect the 16-inch pipe line from



FEATURES OF THE HENDERSONVILLE, N. C., WATER-SUPPLY

1. The intake dam on the North Fork of the Mills River. 2. A portion of the 20-inch cast iron pipe lines through the Forest Reserve in rough terrain. 3. The 16-inch pipe line

the North Fork of Mills River and put in operation prior to September 1, 1928, or as soon as completed.

"c. A storage dam, materials and design satisfactory to the Forest Supervisor, and located on Bradley Creek at an elevation of 2,390 feet above sea level to flood approximately 40 acres, will be constructed as soon as needed by the city.

"d. Further stages of construction required for the completion of the development of the watersheds, including the impounding of water on Fletcher Creek and the laying of additional pipe lines from Wash Creek or other points included in this permit, shall be undertaken as the water requirements of the city of Hendersonville and the territory served by its water-supply make these developments necessary.

"5. The city shall not cut or remove any timber from the watershed, except with the written permission of the Forest Supervisor, provided, however, that all timber and brush below the shore line of the reservoir site and along the pipe line right-of-way, confined to a strip 10 feet wide on either side of the center line, are hereby designated for cutting. No timber or brush above the shore line, including islands or elsewhere, shall be cut, unless marked or designated by the Forest Supervisor. Merchantable timber or forest products which are cut shall be paid for at prices current in Government timber sales, whether used or not, but all timber so cut shall be removed from the permitted area and the National Forest. No charge will be made for unmerchantable timber or forest products. Brush, tops and débris resulting from the cutting shall be piled for burning, under the direction of the Forest Officer in charge.

"6. No burning of timber or brush will be allowed without written permission of the Forest Supervisor at times and places to be designated by him.

"7. The Forest Service will continue its standards of fire prevention on areas; any additional protective measures deemed necessary by the city to be paid for by them.

"8. The city to be liable for costs of suppression and damages from all forest fires originating from its operations and those of its employees and contractors, and in case of fire the entire force of the city or contractor in area and available shall be used to fight such fire; city to pay costs of such fire fighting.

"9. Each locomotive or boiler used in the area, burning wood or coal, to be equipped with spark arrester satisfactory to the Forest Supervisor. The ground around any stationary boiler to be cleared and kept cleared for a distance of 300 feet in all directions, and railroad rights-of-way to be kept free from any inflammable material for a distance of 100 feet on each side of the center of the track.

"10. No charge to be made for earth, stone and sand from the area, if used in the area, but these to be taken only from the places to be designated by the Forest Supervisor, and if removed from the National Forest, to be paid for. Cuts, fills and borrow-pits to be smoothed up and left in neat condition satisfactory to Forest Supervisor.

"11. The city may fence in the area of the reservoir at a distance not to exceed 25 feet from the high-water mark, but gates and passageways must be provided for the personnel of the Forest Service at points to be designated by them. The Forest Supervisor shall also have the right to operate any boats on the pond necessary for the supervision of the area.

"12. The city shall repair, replace or move any improvements, including roads and trails rendered useless by its operations, and shall maintain all roads used by it during its construction operations.

"13. Signs used by the city in the area will be of material, size and design to be approved by the Forest Supervisor.

"14. This permit carries no authorization to hunt or fish on the area except in accordance with rules and regulations of the Secretary of Agriculture, and the city agrees to discharge any employee who breaks these rules. It is prohibited to carry firearms on the game preserve except under written permit from the Forest Supervisor.

"15. The city shall allow sufficient water to pass from its diversion dams to maintain fish life in the stream as required by the Forest Supervisor.

"16. The city shall install suitable gages in all reservoirs, gaging stations below storage and diversion dams, and meters in all pipe lines near the point of diversion. All the records of the city pertaining to the construction, maintenance and operation of the water system shall be open to inspection at all reasonable hours by the Forest officers. The information so obtained will be regarded as confidential.

"17. No commercial concession of any kind shall be let or operated by the city on the lands included in this permit, except under special permit issued by the Forest Service. The Secretary of Agriculture reserves the right to allow use of allotted area under the regulations of the Department, when such uses are determined by him not to be in conflict with this permit.

"18. All dams, spillways, pipe lines, caretakers' dwellings and other structures erected on this area to be approved as to design, materials and construction, by the Forest Service.

"19. Hydro-electric power not to be generated unless further authorization is obtained.

"20. Camping on or construction of buildings not needed by the city or Forest Service on areas will not be permitted.

"21. This permit shall terminate only on breach of some of its conditions, but it may be modified at any time to place it on a basis consistent with conditions required of other permittees for like privileges.

"22. If permit is abandoned, structures may be removed within a reasonable period to be specified by the Forest Supervisor, except where materials were furnished by the Forest Service, but upon failure to remove structures within this time, they shall become the property of the United States."

New Dam and Pipe Line

Under this permit the city of Hendersonville has constructed a small concrete intake or diversion dam on Bradley Creek, to impound water at an elevation of 2,454, and has laid a 20-inch cast iron pipe line to connect with the present 16-inch main from Big Creek.

In arriving at the size and character of the pipe line to carry water from the new intake dam to the city, it was necessary to consider several combinations in order to determine the best and most economical combination for the city at this stage of development, at the same time keeping in mind the ultimate development of this area, using a high storage dam placed farther down the creek to impound water at the same elevation. Diagrams for all possible combinations of 20-inch and 16-inch pipe and high and low dams were drawn and it was decided to lay a 20-inch line, 34,900 feet long, from the dam to connect with the present 16-inch main at Big Creek. The normal flow of water to the city, using this combination, will be 2,800,000 gallons per day, with a minimum draught of 2,660,000 gallons per day, taking water from both reservoirs. This draught yield cannot be increased, and when the city's requirements exceed this amount, a storage dam must be built on one of the watersheds, additional watershed area must be called on, or a new storage reservoir built near the city. By paralleling the present 16-inch main from its junction with the new 20-inch main with a new 16-inch main to the city, the normal yield from these watersheds can be increased to 4,770,000 gallons per day, and the ultimate development of this creek will be a storage dam with such a pipe line and this will provide a draught yield of 3,700,000 gallons per day.

The city of Hendersonville now has allotted to it by the Department of Agriculture about 24 square miles of well-forested watershed area having an annual rainfall of about 60 inches. The present development contemplates only gravity supplies taken from points well up toward the heads of the creeks, but by building impounding dams at points farther down the creeks and pumping the water thus impounded through additional pipe lines, this area can be made to yield up to 20,000,000 gallons per day. If and when it is necessary to exceed this amount, there are additional areas that the Department of Agriculture will allot to the city.

Personnel

The above work was done under a Board of Water Commissioners consisting of C. E. Brooks, K. G. Morris, J. W. Bailey and J. H. Lampley, Manager; Gilbert C. White Co., of Durham and Charlotte, were the consulting engineers; V. B. Higgins and Co., of Charlotte, were the contractors; and R. B. Gandy the resident engineer.

Let the Plan Grow Up with the Town

By ARTHUR HAWTHORNE CARHART

McCrary, Culley & Carhart
City Planning Consultants, Denver, Colo.

Or Shall the Little Town Grow Up to a Big Plan?

Buying a master plan for a small city is like buying a man's suit for a little boy, says the author of this article.

But the very title of the article is a contradiction of all sound principles of good community building, protests Charles H. Cheney, California City Plan Consultant, in the comment which follows; while Robert Kingery, General Manager, Chicago Regional Planning Association, declares that "heresy of the cruelest sort" must often be embraced at the dictates of expediency and practical experience, and that often city planning can become city building only through project-by-project jobs.

A FEW months ago I sat with a committee of the Chamber of Commerce and several city officials in a small, progressive, and growing city of the Southwest where I had been called for a conference. The city faced problems, planning problems, which these men knew should be solved.

"What will it cost?" they asked me.

"What will what cost?"

"A city plan."

When I asked how much of a planning program they wanted, they "supposed they would have to have the whole works," and thereupon produced the plan of "Western City," over in the next state.

"Guess that cost about $12,000," they told me. "We've figured that that is a pretty healthy amount to put into a plan all at one time, but we didn't know of any other way to go about the job."

The printed document they handed over was the elaborate type of planning report. It was a good piece of work, all well enough for a metropolitan center, or for any small town that could afford to pay for it—and what is more important—afford to carry it out. But this town didn't need such a plan. What it needed, in the present state of its development and financial limitations, was a lot of horse-sense planning: some sound technical advice, and enough of a program blocked out for it to keep its developments headed in the right direction for the next decade. A reliable firm of city planning consultants could prepare such a program for a very reasonable charge, and, acting on an annual retainer basis, could aid in carrying it out over a term of years, making such reasonable revisions and such additions as new conditions arising through rapid growth might dictate, with no heavy burden for planning services at any stage of the development.

I mention this city especially because its attitude is typical. The small city is strongly appealed to by big plans, in spite of the functional and the esthetic unsoundness of such plans. The attitude is apt to be, *it must be big, and if it's big, it's good!* Now such a purchase of "big town plans" by small towns in most cases acts as a dust catcher for a long time and then becomes obsolete, whereas if the other kind of planning procedure blocked out to fit the city's particular needs and kept growing with the city's growth, had been adopted, it would have been accomplishing substantial results. What such a city doesn't see is that it is just as absurd to make a big-city plan for a town of 10,000, unless that town is right in line for gigantic development, as it would be to try to cut and fit a man's suit on a ten-year old boy with the idea of his growing up to it. Before he does so the suit may go entirely out of style; and then, again, nobody knows how big the boy will ultimately grow. It is a case of using some reasonable judgment in making a suit for the boy or a plan for the growing small city.

It has been my privilege, a number of times during the past year, to talk to civic organizations and city officials in towns and cities of 10,000 to 20,000 concerning their planning needs. In almost all of them, as in the above city—and in the average city of this class, I believe—there are three divisions of planning that claim primary consideration: the thoroughfare plan; zoning; and the park system.

Devious, Devilish Thoroughfares

Any town on a main highway has a major thoroughfare problem, even if it boasts but one street. Some of the worst thoroughfare planning in the world is to be found in towns of around 1,000 population located on our transcontinental highways. Blind corners, bad offsets, a maze of streets leading the traveler into town, and the traveler amazed to get out of the town—and thankful! Good thoroughfare planning for a small city consists largely in blocking out good connections adequate to see the cross-country and regional highways safely through the town. It is a notable fact that these very highways will later become the major streets. To prove the appropriateness of this sort of basic street planning, it is only necessary to try traveling through any half-dozen cities of 12,000 or thereabouts, selected at random. Their thoroughfares will prove devious and devilish. Such highways left unplanned become a serious handicap to the community as it grows. "Hooked up" directly with the major roads running through the region, they become a great asset.

Zoning and Parks

The merits of early zoning seldom need arguing. Few intelligent persons will stand out against a well-planned, well-executed, comprehensive zoning plan and ordinance. And very few people will argue against parks, the only questions about them being Where? and How?

Careful planning is full guarantee of putting money into parks where they will do the most good. Such planning means looking reasonably far ahead and arranging for open spaces—both parks and playgrounds—along the line of march of the town's growth. If these are not planned sufficiently in advance of actual growth, increased land values may make their purchase prohibitive to the community. Once purchased, they must be developed, plan-wise, when the time comes. It is impossible to overestimate the value to a city of such areas properly planned and located, and kept in scale with other developments.

The little city that "goes in for the whole works" takes on, in addition to these three fundamentals, the problem of a civic center; the location of public buildings in relation to that center; community centers; a school-building location plan; a transit plan if bus routes operate in the municipality; transportation and terminal problems, if the town is a manufacturing center; and probably a dozen other problems. And these things *should* all be taken care of—not necessarily all in advance, but one at a time, as need arises. The point I wish to

drive home is this: the importance of getting basic planning done first, then going on with an orderly expansion of the plan till, in due time, it is made to include "the whole works."

Recommendations

To these towns or cities of 10,000 to 20,000, then, my recommendations are usually about as follows:

1. Call in some consultant in whom you have confidence; a man who will not try to sell you the world, but who will sell you just the service that will be of the greatest value to you not only as a starter, but year by year, as your plan develops and becomes a reality.

2. Find out with his help which one of your basic planning needs requires first attention, and start work on this, making a specific program and outlining the steps of its accomplishment. Budget this planning for the first six months or year. "Sell" it to the community.

3. For the next six months, take up the next most important essential. Make plans for it. Get a program of accomplishments started. Then go on to the next step.

By the time the second or third division of a general city plan is reached, the citizens and officials will begin to get a new conception of good planning as consisting of the orderly tying-in, one by one, of each problem as it arises, with the basic city design. When they have reached this point, they realize:

That planning for a city of 10,000 to 20,000 is valuable, reasonable, almost indispensable;

That plans made in scale with the needs of the town are actually capable of accomplishment;

And such plans grow naturally as the town grows.

By that time the town is on the high road to real city planning.

Conflicting Views on the Foregoing Article

Letters from Two Town Planners to Whom The American City Submitted Mr. Carhart's Article for Comment

Let the Town Grow Up With a Plan

To the Editor of THE AMERICAN CITY:

Your request for comment on Mr. Carhart's article, "Let the Plan Grow Up With the Town," is timely, as this article starts off with a title contradictory to all sound principles of good community building.

The reason that our cities and towns in America are 99 per cent ugly, inconvenient, uneconomic, and tied up in such traffic knots, is just because they have followed the doctrine this title implies. There are, however, some paragraphs which belie the title, and that border upon some of the sounder principles of town planning, but why prejudice them?

No community, however small, ever achieved a finished result, even on a few acres or for a few hundred people, without having a well-thought-out plan of objectives. This is so well recognized that subdividers of intelligence and ability go to extreme lengths of setting out meticulously in deed restrictions or preliminary declarations of protective covenants just what can be built, and where; zoning, height limits, setbacks, types of architecture, scheme for approval of plans; and at the same time establish in advance layout of streets, parks, playgrounds, planting of sidewalk trees and recreation areas, and even provide community buildings, etc.

The incorporated town of from 1,000 to 10,000 people can become a permanently pleasant place in which to live and work, only by obtaining early a most carefully prepared plan of streets, zoning, parks and playgrounds, grouping of public and semi-public buildings, and a scheme for maintaining or establishing definite architectural character, harmonious color, and planting. There are no towns of this country or Europe that have arrived at any satisfactory result in any other way.

Sound town planning implies and requires the setting-down of objectives within reasonable reach of needs, and allowing for reasonable future development. Programs that are too big or involve greater immediate expenditures than the community can reasonably handle are no worse than programs of so-called day-to-day or year-to-year community building without any comprehensive plan in view.

Sound planning gives the community a comprehensive program of year-to-year improvements, to be built only as and when justified by the community's growth. There is always greater economy in building constructive links of a definite chain than in hit-and-miss building of links that will not fit together.

The only notable towns of the country are those that were carefully pre-planned.

CHARLES H. CHENEY,
Town Planner, Palos Verdes Estates, Calif.

City Planning Advice Becoming Sounder

To the Editor of THE AMERICAN CITY:

For a city planner to recommend anything but a "comprehensive plan," appears to be heresy of the cruelest sort. However, if city planning is to become city building, most communities must enter upon their job project by project.

In the Region of Chicago the professional city planners have been following such a program for some years, with signal success.

Regional planning as practiced by the Chicago Regional Planning Association consists in part of promoting the carrying-out of village and city plans in each one of 280 municipalities, these plans to coordinate with plans for county, state and public service improvements. Too often we are confronted with the municipal budget which says we cannot spend $10,000, $25,000 or $50,000 for a comprehensive plan, but we know we do need a zoning ordinance and a plan for parks, as well as a definite system of major thoroughfares. Where the need for zoning is most acute, we recommend that they proceed with a zoning ordinance, since it is just as important a part of the municipal plan as any other feature, and usually the most important and basic.

While preparing the zoning plan, the Commission and its consultant are unquestionably studying and taking into consideration highway and street traffic matters and other units of the future city plan, and the zoning ordinance and map are simply laying the foundations for the carrying-out of the entire plan by automatically designating the location of parks, playgrounds and school grounds and by designating the major business and industrial streets and the minor residential areas.

This also is heresy, but it is working. Many of the communities in the Region of Chicago have come to the next step in their plan after the zoning ordinance has brought the street problem, the park problem or some other unit more directly into focus, and has shown how definite is the need.

Mr. Carhart is exactly right when he refers to the old-fashioned city plan as being a beautiful document, printed with finely colored drawings and embodying excellent and sound technical advice. In some cases, however, the soundness of the plan is lost because of the fact that the entire dose is given at once and not laid out on the basis of a continuing program over twenty-five years or more, and, further, because such a continuing program is not budgeted in accord with the city's present and expected finances.

A most healthy condition is now coming to exist among the professional city planners, in that they are recommending the plan unit by unit, and in that they are budgeting public funds in accord with the ability of the community to pay for the plan which they work out as a program.

ROBERT KINGERY,
General Manager, Chicago Regional Planning Association, Chicago, Ill.

Cost Analysis of an Activated Sludge Sewage Treatment Plant

A CLEAR EFFLUENT WITH MECHANICAL AERATION

By WEBSTER L. BENHAM

PRESIDENT, BENHAM ENGINEERING CO., CONSULTING ENGINEERS, OKLAHOMA CITY, OKLA.

AS is the case of most growing cities, Frederick, Okla., a city having an estimated population of 6,000, found its old sewage disposal plant inadequate, and damage suits were threatening. Some satisfactory means of disposing or purification of the domestic sewage was mandatory.

The Old Plant

The old sewage disposal plant consisted of a screen and grit chamber, one reverse-flow Imhoff tank, a sludge drying bed and a chlorination chamber, but the plant had been rearranged and did not function as it was originally intended. A study of the plant showed that it was inadequate. The City Council directed the engineers to investigate the conditions and to make recommendations for a new or remodeled plant. From volumetric measurements of the sewage made over a period of time, it was found that a flow of approximately 280,000 gallons of sewage per day was reaching the disposal plant, a figure which would nearly equal the daily average dry-weather flow.

Activated Sludge Treatment Recommended

Several types of plants were given consideration, and it was finally decided to recommend an activated sludge plant of the mechanical surface aeration type, especially since pumping would have to be resorted to. It was decided to design the new plant for a future flow of sewage of 400,000 gallons per day, representing an increase of about 40 per cent of the estimated average dry-weather flow.

The new plant consists of screen chamber and storm overflow weir, preliminary settling tank, activated sludge aeration and sludge re-aeration tanks, final settling tank, activated sludge division box, control house and weir chamber for measuring the flow of the treated sewage.

The old Imhoff tank was converted into a sludge digestion tank and the old sludge drying bed was cleaned and repaired for use with the new plant.

Screen Chamber and Screen Overflow

Raw sewage enters the plant and is passed through a screen chamber having a fixed bar screen, which prevents large floating and suspended matter from entering the plant.

In connection with the screen chamber a storm overflow weir is provided to by-pass the dilute sewage, which will occur at times of storm flow.

Preliminary Settling Tank

This tank is provided with suitable baffle and scum walls, together with influent ports and outlet weir to provide preliminary sedimentation. The hopper bottom of the preliminary settling tank has steep slopes leading to a centrally located sludge outlet pipe. Settled sludge is removed once each day from this tank by means of a small pump located in the control house.

Activated Sludge Aeration Tanks

Four aeration tanks and one sludge re-aeration tank are provided for the aeration and activation of the sludge. Each tank is equipped with a Simplex mechanical surface aerator operated by means of a small motor. The settled sewage from the preliminary settling tank upon entering the aeration tanks undergoes continual circulation through the aerators, which thoroughly agitates and aerates the liquid. This liquid is mixed with a certain percentage of activated sludge, which has been returned from the final settling tank and aerated in the sludge re-aeration tank.

Control gates are provided in each tank so that a maximum degree of flexibility in their operation is possible. During the hot summer months it is necessary to operate the entire number of aerators, while at other times of the year, the operation of certain of these tanks can and probably should be discontinued.

Final Settling Tank

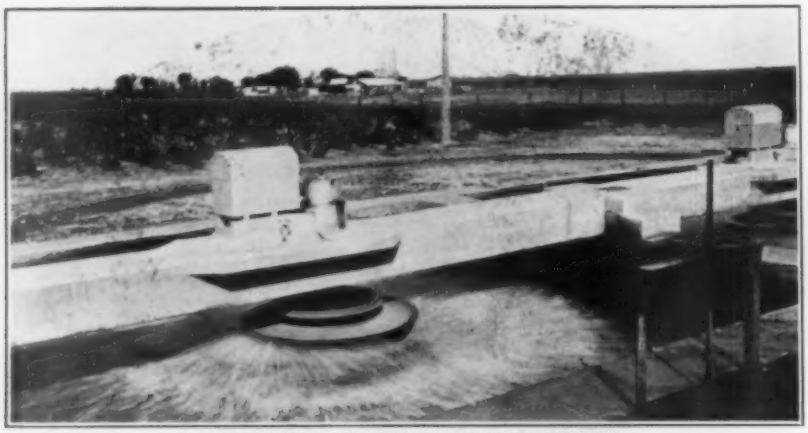
The aerated liquor is retained in this tank for final settling of the treated sewage. This tank is equipped with a Dorr mechanical clarifier so that a continual removal of the settled sludge is possible. The sludge thus removed is lifted to the sludge division box, where it is divided, a portion being sent to the aeration tanks and the remainder being allowed to enter the digestion tank for final sludge digestion.

Sludge Division Box

A small box having a weir for measuring the flow of activated sludge which has been pumped from the final settling tank is included. This sludge division box has a manually controlled proportioning device for accurately proportioning the amount of sludge to be returned to the aeration tanks. This part of the plant is of great importance, being the controlling factor in the activated sludge treatment of sewage.

Digestion Tank

The Imhoff tank was cleaned and repaired and certain alterations were made in the interior walls so that it



THE SIMPLEX MECHANICAL SURFACE AERATOR

could be used for a sludge digestion chamber. The capacity of the Imhoff tank was entirely adequate for its use as a digestor. The fact that the arrangement of this tank with relation to the sludge drying bed allowed sludge to be drawn by gravity rather than by pumping reduced the cost of operation of the plant to a certain extent. In remodeling this Imhoff tank it was necessary to remove some of the sloping partition walls in the sedimentation chamber, and to provide openings in the center partition wall so that a uniformly digested sludge could be obtained.

Sludge Drying Bed

The improvements included the cleaning and repairing of the present sludge drying beds. The beds are of sufficient size to handle the sludge from the sludge digestion tank, but it was necessary to add a new surface of sand to these beds and to clean the underdrain system.

Control House

A concrete and brick control house was constructed so as to provide a suitable housing for the sludge pumps and laboratory equipment. There are three small pumps, two of which are the centrifugal type and the other the double plunger force type. The centrifugal pumps are used for continual removal of the sludge from the final settling tank, and the plunger pump is used for intermittent removal of the sludge from the preliminary settling tank.

Laboratory equipment is provided for making all necessary chemical tests so that complete control of the sewage treatment is possible. This equipment provides testing apparatus for making stability tests, biochemical oxygen demand tests and hydrogen ion concentration tests.

Electrical Power and Water Service

An electric power line is provided for operating the small sludge pumps and for lighting purposes, and a small water line was necessary for washing down around the plant and general water service.

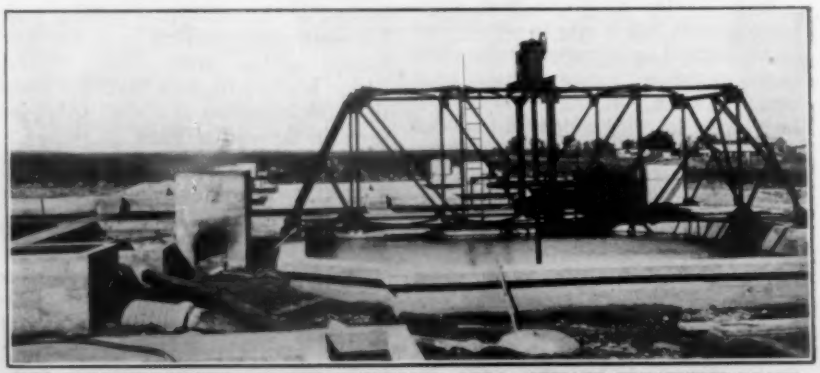
Operation of the Plant

Normally the sewage enters the screen chamber and flows into the preliminary settling basin with steep hopper bottom, where the heavier solids are settled out. The bottom of the tank is connected with a suction line to a plunger sludge pump in the pump-house, having a capacity of 100 g.p.m. against a total head of 10 feet, gear-driven by a 5-hp. motor. This pump is used about ten minutes daily to remove the sludge from this tank by pumping into the sludge digestion chamber. At the beginning of the operation of the plant, a certain amount of settled sewage from the preliminary settling basin is pumped to the initial or re-aeration tank, to aid in the development of the activated sludge.

The sewage from the preliminary settling tank then flows through a trough to the aeration tanks, where it is mixed with a predetermined percentage of the sludge from the final settling tank, accomplished by means of a sliding gate in a division box mounted over the sludge digestion tank. The sludge is drawn from the final settling basin by the pump into this division box, where the division of waste and returned sludge is accomplished. The sewage is put in motion by the aerator cones located in each of the five aerator tanks and is kept in constant agitation. Each cone is geared to revolve at approximately 60 r.p.m. The aerators are driven by means of a reduction worm gear, ratio 15 to 1, the worm being of steel, meshed with bronze gear, all mounted in cast iron gear case and working in a bath of oil. Each head gear and 2-hp. motor is mounted on a cast iron base plate, and the motor and worm shaft are connected through flexible couplings. The motors are 220-volt, 3-phase, 60-cycle, 900-r.p.m. and are equipped with a starting switch with overload release. The motors are controlled from the pump-house by push-button control located on a panel in the pump-pit. Each aerator is arranged to rotate in the opposite direction in each successive tank.

Control gates are provided so that a maximum degree of flexibility in operation of the tanks can be procured by cutting out certain units at times when complete operation of all units is unnecessary to procure satisfactory results.

From the aerator tanks, after being in constant and intimate contact for an extended period with the activated sludge which is constantly formed during the operation of the plant, the sewage flows into the final settling basin, equipped with a mechanical clarifier, which continuously removes the settled sludge. This tank is shallow and is provided with a bottom sump connected with either of two centrifugal pumps. The pump lifts the settled activated sludge into the division box of the sludge digestion tank, where a portion of the sludge is allowed to flow by gravity to the re-aeration tank, while the remainder flows into the sludge digestion tank. This sludge division box is manually controlled, so that the amount of sludge returned to the aerator tanks can be changed according to the results which are obtained by the practical operation of the plant. This part of the plant is of great importance, as it is the controlling factor in the activated sludge treatment of sewage, eliminating all possible chance of losing previously developed activated sludge. After a period of digestion in the tank, the sludge is drained off by gravity to the sludge drying bed, where the water is drained out, and the sludge is dried in the sun and air, after which it may be removed



THE DORR THICKENERS AT THE FREDERICK, OKLA., SEWAGE TREATMENT PLANT

at intervals. This dried sludge is a rich fertilizing agent. The drains from the sludge beds are connected with the effluent line and run into the creek.

It was deemed advisable to provide for a chlorination contact chamber to sterilize the clarified treated sewage from the final settling basin, more as a matter of precaution and to overcome the prejudice of the public, who are sometimes very skeptical that a sewage treatment plant can operate efficiently without some means of sterilization.

PERIODS OF DETENTION

Preliminary settling tank
Based on 400,000 g.p.d.—day of 16 hrs....37 min.
280,000 g.p.d.—day of 16 hrs....52 min.

Aeration tanks
Based on 24-hour operation with 25 per cent sludge return of flow of 400,000 g.p.d.
400,000 + 100,000 sludge return..6.6 hrs.
280,000 + 70,000 sludge return..9.4 hrs.

Sludge conditioning tank
At 400,000 g.p.d. with 25 per cent sludge return....8.2 hrs.
At 280,000 g.p.d. with 25 per cent sludge return....11.7 hrs.

Final settling tank
Based on 16-hour flow of 400,000 g.p.d. with 25 per cent sludge return....1.6 hrs.
Based on 16-hour flow at 280,000 g.p.d....2.2 hrs.

CAPACITIES OF TANKS

Preliminary settling tank	15,100 gallons
Aeration tanks	136,000 gallons
Sludge conditioning tank	34,320 gallons
Final settling tank	50,200 gallons

APPROXIMATE DAILY POWER REQUIREMENTS

	Daily Kwh. Required
Aeration tanks 1.8 hp. per unit 1.8 x 5—9.0 hp.—6.75 kw. 24-hour operation, 24 x 6.75	162 kwh.
Sludge sump from preliminary settling tank 100 g.p.m.—10-ft. head—0.5 hp.—0.38 kw. Daily operation 1/6-hr. 1/6 x .38	0.07 kwh.
Activated sludge pump 100 g.p.m.—10-ft. head—0.5 hp.—0.38 kw. 24 hour operation—24 x 0.38	9.10 kwh.
Clarifier mechanism 0.5 hp.—0.38 kw. 24-hour operation—24 x 0.38	9.10 kwh.
Total	180.27 kwh.

Estimated Power Costs and Operation Schedule

The estimated power costs based on a demand charge of $2.00 per kw. for the maximum demand of 8 kw. is $16.00 per month.

It is planned to operate five of the aeration units for four months of the year, three during three months, two during three months, and there will be two months of the twelve when it will not be necessary to operate any aeration units.

The plant was completed and put in operation the latter part of July, 1929, and excellent results were obtained, the effluent being clear, apparently free from any solid matter, and without the least trace of odor. The plant has more than met the requirements of the specifications.

The plans and specifications for this work were prepared by the Benham Engineering Co., consulting engineers, Oklahoma City, Okla., and all work was done under their supervision. The contractor was Earl W. Baker & Co. of Oklahoma City. The cost of the completed plant and outfall sewers was approximately $35,000.

YEARLY AND MONTHLY COSTS AT 1.5 CENTS PER KWH.

Units Operating	Months	Kwh. Per Day	Total Kwh.	Kwh. Cost	Demand Charge	Total Cost
5	4	181	21,750	326	$64.00	$390.00
3	3	116	10,450	157	31.00	188.00
2	3	84	7,560	114	24.00	138.00
0	2	19	1,140	17	5.00	22.00
						$738.00

Cost per day $\frac{738}{365}$ $2.03

Cost per month $\frac{738}{12}$ —..... $61.60

Cost per 1,000 gallons at 400,000 per day— $\frac{2.03}{400}$ $0.0051

New Sanitary Code Proposed for Local Adoption in Cities and Villages of New York State

By HUNTINGTON WILLIAMS, M. D., DR. P.H.
STATE DEPARTMENT OF HEALTH, ALBANY, N. Y.

THERE has just been published for distribution by the New York State Department of Health a Suggested Sanitary Code for Cities. It is the work of a joint committee representing the State Department of Health and the New York State Conference of Mayors and Other Municipal Officials. As declared in the introduction:

> This code . . . is designed to furnish suggestions and serve as a guide for municipalities desiring to enact local codes. In part it is an adaptation of the State Sanitary Code, which is effective everywhere in the state excepting the city of New York.

During past years a number of cities and villages throughout the state have adopted local sanitary codes, ordinances or board of health regulations. In many instances these have been amended and brought up to date. The present suggested sanitary code for cities has been prepared in order to assist in this process. The cities and larger villages are apt to adopt local health regulations for two reasons. First, such action is in keeping with the modern trend toward home rule in legislation. Secondly, for a violation of a local ordinance or regulation the board of health may prescribe and impose a civil penalty, whereas a violation of the state sanitary code at present constitutes a misdemeanor. Equally good results are often secured by the less drastic method. A further benefit from the suggested city code is that its adoption would lead to uniformity among municipalities within the state. By periodic revision it is intended to keep this suggested city code consistent with the state sanitary code. Those communities which adopt it will be expected to keep their local codes up to date by similar periodic amendment.

The chapter titles in the new suggested city code are as follows:

CHAPTER
I. Definitions
II. Communicable diseases (26 sections)
III. Milk and cream (27 sections)
IV. Meat and meat products (13 sections)
V. Food and food handling (5 sections)
VI. Sanitation (12 sections)
VII. Swimming pools (17 sections)
VIII. Miscellaneous (9 sections)
IX. Penalties and general provisions (3 sections)

The code material is naturally fitted more particularly to the needs of communities in New York State, as it is based largely upon the state public health law and State Sanitary Code of New York. It has been pointed out by E. D. Greenman,[1] Assistant Director of the New York State Bureau of Municipal Information, that sanitary and other special codes applicable to various sections of the country are extremely difficult to standardize. Any local sanitary code, ordinance or regulation must be consistent with basic state health legislation.

During the past fifteen years the New York State Health Department has at intervals issued adaptations of the State Sanitary Code, suitable for local adoption by cities and villages, and has supplied periodic amendments thereto. The American Public Health Association[2,3] has in preparation an outline of the essentials for a model local health ordinance. In 1927 the Iowa State Department of Health issued a publication entitled "Suggested Outline of a Sanitary Code Suitable for Towns and Cities in the State of Iowa."

The members of the committee charged with the preparation of the new suggested code for cities of New York State were the following: Matthias Nicoll, Jr., M.D., State Commissioner of Health, Chairman; William P. Capes, Executive Secretary, New York State Conference of Mayors and Other Municipal Officials; Paul B. Brooks, M.D., Deputy State Commissioner of Health; Edwin H. Codding, M.D., Health Officer, New Rochelle; John M. Collins, M. D., Commissioner of Health, Schenectady; Leo F. Schiff, M.D., Health Officer, Plattsburg; Charles R. Skinner, M.D., Former Health Officer, Hudson; and Huntington Williams, M.D., Dr. P.H., District State Health Officer.

Copies of the new code are obtainable from the New York State Department of Health, Albany, N. Y.

[1] Greenman, E. D.: "Codification of Ordinances." Publication No. 6. Municipal Administration Service, New York City, 1928.

[2] "Report of Committee on Model Health Legislation."—*American Journal of Public Health*, p. 259, March, 1921.

[3] "Committee on Administrative Practice."—*American Journal of Public Health*, p. 208, February, 1928. (See also p. 62 of the January, 1930, issue of the same publication.)

Four Ways to Achieve Beautiful Highways

"HITHERTO, HIGHWAYS HAVE CONSISTED OF THREE PARTS—LINE, GRADE, AND SURFACE. THE AGE REQUIRES AN ADDITIONAL FACTOR—BEAUTY"

BETTER roads, as we have ordinarily understood the term, are roads with a highly efficient "place to place" value. This was sufficient for yesterday, but it is not sufficient for today, and will be even less so for tomorrow, according to James H. Taylor, Landscape Supervisor, Massachusetts State Highway Department, who says: "A new partner must now be taken in this particular business of public service—Beauty."

In a paper delivered at the fall meeting of the American Society of Civil Engineers, and printed in digest form in the Society's *Proceedings* for December, 1929, Mr. Taylor described four ways by which the new partnership is to be achieved—prevention, elimination, conservation, and augmentation.

Prevention of the Unsightly

The foundation for highway beauty, Mr. Taylor believes, is laid by the designer and locating engineer before construction work is begun:

"A field party chief, whose big aim is a transverse check, is like the proverbial 'bull in a china shop.' His men, with never a thought, chop great scars in the tree trunks to locate (very accurately, no doubt) their tie points. What does the stolid assistant care for beauty? He could have thrown his line a few feet from that row of splendid maples, but it never occurred to him. If you are going to keep men like that on the payroll, your particular 'highway beautification' will progress slowly. . . .

"In the pursuit of highway beauty, it is necessary for the designer constantly to visualize the ultimate effect of the design. In surface alignment, the curves must be adequate and the tangents part of the harmony. In grade, there must be no inexplicable 'lump' such as the eye of travel detects instantly. *We must constantly keep in mind the total effect of the completed road.*

"Bridge designers are apt to be men who are merely mathematicians; very clever with the slide rule but totally ignorant of the rule of beautiful proportions. A bridge should be something more than a structure of designed interior strength; every bridge should be designed for external beauty as well and no bridge should be designed without competent architectural assistance. The lines of these permanent works are to delight or disgust the eye for centuries to come. . . .

Elimination

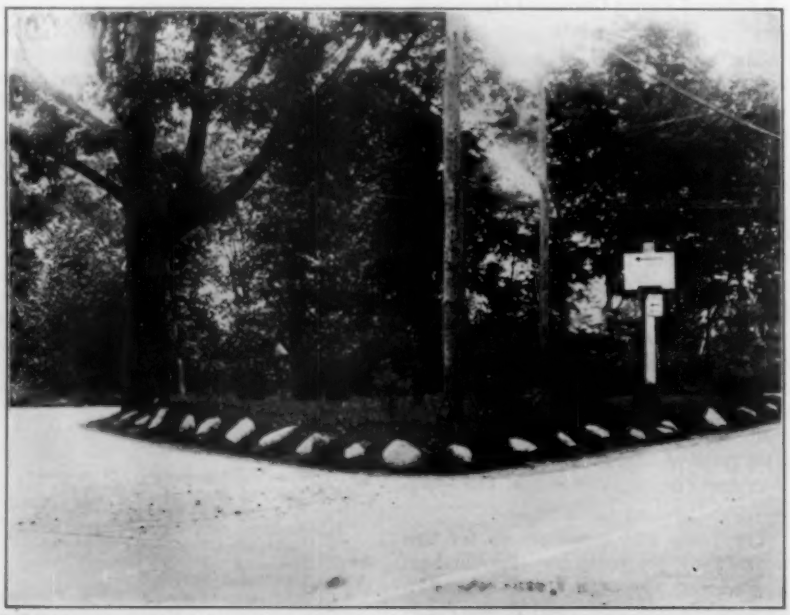
"If there have been mistakes through poor design, poor workmanship, or failure to complete the work properly, maintenance must do its best to correct the conditions. If construction money has failed to provide for tree care after construction, maintenance must 'get busy.' Stumps left a foot or two high must be removed. If beautification is to be served faithfully, we must get every dead thing off the highway—dead wood, dead tracks, dead watering troughs, dead signs, dead wire, dead poles, dead contractor's junk. The 'bump' at the railroad crossing must be smoothed out, and after the settlement is complete, the surface drop on either side of its bridge walls should be corrected; also, the specially undesirable weeds, burdock, yellow dock, mullein, and the like. . . .

"There is no reason why beautiful brooks and rivers should be allowed to run behind screens of trees when a little axe and saw work will give us beautiful pictures. This is one way of the finest type of highway beautification by elimination. The cutting-out of such views, however, must be done by one who has some idea of the composition of the picture. In the past, the chief destroyer of roadside comeliness has been the wire companies."

Conserving Natural Charm

Clearing the roadside requires a technique based on experience:

"It is of course apparent that highway



Illustrations by courtesy of American Society of Civil Engineers

TRAFFIC SAFETY ISLE APPROPRIATELY DEVELOPED

beautification in any of its phases is possible only as a result of some degree of education. This is especially necessary for this particular stage. The workman must be handpicked and must know the treasures of the roadsides. Only men with real interest in and for the work are worth while. Given just a little to build on, such an interest is easily established. I find that some of our men, who a few years ago knew very little about roadside growth, are today reading into the subject, buying expensive books, using the cultural terms; in short, acquiring a roadside technique. And it must be so, for how can a man develop a roadside, unless he is familiar with its factors?"

Beauty by Augmentation

Mr. Taylor advocates the avoidance of artificiality and the cultivation of natural growth:

"Introduced trees, shrubs, vines, and plants will be used with increasing intelligence as this idea moves along. The monotonous planting of mile after mile of straight rows of evenly spaced trees will not serve the coming generation. More and more will we observe Nature's inimitable way. There can be no better teacher. The scarlet of the woodbine on the grey rock, the glowing lily against the lightened wall, are very small but wonderful touches.

In Conclusion

"Your splendid highways in their present frames, beautiful as they are without a thought of esthetic improvement, are amply foundationed to continue as able ministrants to the mere physicality of living. They will carry just as many loads of ashes, just as many bales of rags, just as many pounds of fish; but to my mind, I have suggested the step beyond—the refinement of method—the charm of completeness."

Giant Trees Successfully Moved in Japan

By P. H. ELWOOD

HEAD OF DEPARTMENT OF LANDSCAPE ARCHITECTURE

IOWA STATE COLLEGE

THIS large ginkgo tree (*Ginkgo Biloba*), 5 feet in diameter at the base, was successfully moved this past summer to the new Congress Park in Tokyo, Japan. The operation required the services of 538 men and was completed in just 30 days at an actual cost of 2,050 yen ($1,025). When we consider the great size of the ball of earth (20 feet in diameter and 7 feet thick) moved with the tree and the enormous weight of 80 tons, and the fact that the operation was conducted in midsummer (June 15-July 15) while the tree was in full leaf, the magnitude of the undertaking is apparent. The fact that the tree is now alive and thriving in the new Congress Park is evidence of the remarkable skill of the Japanese in large tree moving.

A fascinating story was told me by the Hon. H. Kuwashima, of Tokyo, which typifies the important place tree moving and the love of trees and nature occupy in the hearts and minds of the Japanese people.

In Shiba Park, Tokyo, now stands a magnificent ginkgo tree nearly 8 feet in diameter and evidently in full, vigorous growth. Thirty years ago this 370-year-old tree was found to be in the path of a new street intersection and it was advertised for sale for fuel purposes. Dr. S Honder, upon hearing of this, went immediately to Mayor T. Hasi (later Ambassador to the United States) and asked permission to move the tree and save its life. He was granted his request, pledging the Mayor that if the tree died he would slay himself.

The tree was laboriously moved 1,300 feet in 25 days at the astonishingly low cost of 500 yen ($250). For several years afterwards Dr. Honder could be seen watering and caring for the tree daily, and it stands today a glorious living monument to his devotion.

Construction methods in a country like Japan where labor is plentiful seem to us extravagant and needlessly laborious. However, the meticulous care in handling the trees from the digging to the final planting insures a very low death-rate even when large trees are moved in midsummer. The high summer humidity in Japan is also an important factor in the successful tree-moving operations. The human element must not be overlooked, as everywhere in Japan the love of trees is evident, and large, well-trained tree-moving crews are possibly more easily organized there than anywhere else. The love of trees and plants alone would not suffice, but the national characteristic of unfailing patience lends itself particularly well to the successful handling of plants. Large tree moving surely requires great patience and perseverance; therefore, we can learn much from our Japanese brethren concerning all operations where plants are involved and where skillful and sympathetic handling are so important. There is a fine kinship everywhere evident in Japan between nature and man.

EDITORIAL NOTE.—The contribution of American science to the problem of moving giant trees is briefly reviewed in *U. S. Department of Agriculture Farmers Bulletin* No. 1591, "Transplanting Trees and Shrubs," by Furman Lloyd Mulford, Associate Horticulturist of Plant Industry, which illustrates and describes tree-moving operations of all kinds. (Government Printing Office, Washington, D. C., Price 10 cents.)

WE MUST GO TO THE JAPANESE TO LEARN THE PATIENCE AND SKILL FOR A JOB LIKE THIS

THE "CATFISH ROW" OF DU BOIS HEYWARD'S "PORGY." TYPICAL SLAVE QUARTERS WHICH HAVE BEEN RECENTLY RESTORED

The Preservation Charleston's Fine

By R. S. MacELWEE, Ph.D.

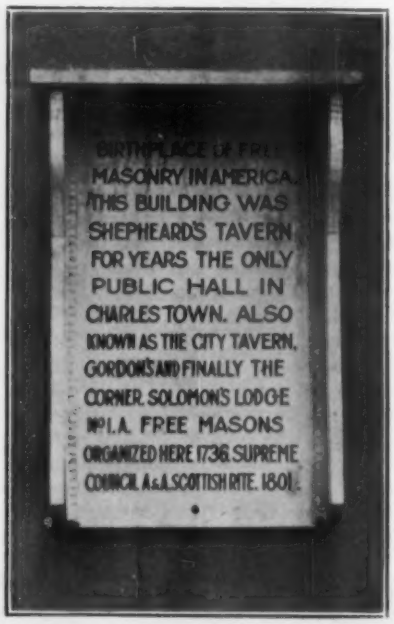
Former Commissioner, Bureau of Port Development
Charleston, S. C.

THE rapid progress of the city of Charleston as a port and industrial center, together with the general urge of its citizenry towards modernization, threatens the destruction of one of the few spots in North America where a large area of the city is preserved almost intact in its original Colonial or ante-bellum appearance.

Progress in modernization, to the average mind, means destroying everything that is old. On the other hand, there is a small group which would conserve anything that is old regardless of its possible beauty or usefulness. Fortunately for Charleston, during these recent years of modernization and expansion, a fair-sized group of people from the city and a still larger group from the North have recognized the significant fact that modernization in the sense of marble bathrooms, electric refrigerators, oil-burning furnaces and electric cooking ranges is in no way incompatible with the chaste and graceful mantels and panels of the interiors, and the secluded gardens and well-rooted shrubbery, and other elements of culture and beauty as well as historic association, that have been preserved in such large number in the old houses of Charleston.

The reason for the state of preservation of old Charleston is simple. Once the great banking and shipping center of the South, Charleston was ruined by the Civil War and checked for two generations as a growing community while it remained cut off by rivers and swamps from the rest of the United States.

There have been three important inroads upon this unusual preservation of street after street of early ante-bellum and pre-Revolutionary, and even early eighteenth century, houses and mansions—the great fires of 1861 and 1863, the earthquake of 1886, and the disastrous cyclone of 1911 that tore away lovely tile roofs and a skyline of picturesque chimneypots such as are found only in the old towns in England. Nevertheless, perhaps two-thirds of the old part of Charleston remains substantially intact. There were replacements of a provisional nature after the earthquake and fire, and in the wretchedly bad taste of the late eighties. Tin roofs, in the process of re-covering the houses, came to replace the old tiles destroyed by the hurricane.



DIGNIFIED BUT INEXPENSIVE WOODEN TABLETS MARK THE CITY'S HISTORIC TREASURES

The Great Present Opportunity

At the present time there are two tendencies in new construction. Fortunately, the almost uniformly mediocre modern dwelling-house has not invaded the old quarter to any great extent, but has sprung up in the new Boulevard area, reclaimed from the mud flats, and in the subdivisions across the Ashley River. Fortunately also, the commercial trend of the town—out Meeting and King Streets, has destroyed comparatively little of historical architectural value. Therefore, there is still time to zone the city to prevent destruction of the old quarters for commercial purposes and supply competent guidance to regulate new construction in such a manner as to preserve in the true Charleston precedent the appearance of the old houses, at least so far as exposed to public view.

The periods of Charleston architecture are: the early Colonial, usually the small brick houses, such as in Tradd, Church, Cumberland and Ansen Streets—1700 to 1750; the pre-Revolutionary, below Calhoun Street—1750 to 1776; and the ante-bellum, principally on East Battery, Ashley and Rutledge Avenues, Montague and Vanderhorst Streets, largely constructed between 1812 and 1861. This entire project for restoration and conservation concerns structures built before the Civil War.

A positive effort of replacement in the old manner has been very manifest during the last two years. Several large mansions have been purchased and are being restored with meticulous care: the Siegling Mansion, on East Bay, by Samuel Guggenheim; the Slone Mansion on South Battery, by Mrs. Roebling, under Mr. Blumm of New York and Simmons and Lapham of Charleston; the Simmington House, with the famous sword gates, on Legare Street which has been acquired by Mrs. Parsons of Charleston. The house at the corner of Lamboul and King Streets, being restored by Mr. and Mrs. John Peyton Clark of New York; the Colonial house of E. W. Durant on Meeting Street, and an ante-bellum residence (1849) of the writer, on Montague Street,

THE AUTHOR'S HOME, AN ANTE-BELLUM MANSION ON MONTAGUE STREET

and Restoration of Old Architecture

"The city of Charleston is an architectural history in itself."
—THOMAS TALMADGE,
in "The Story of American Architecture"

A GEM OF THE PRE-REVOLUTION PERIOD—THE SLONE MANSION ON SOUTH BATTERY

are all indicative of the trend of restorations of the larger houses.

Slave Quarters and Pirate Houses

Likewise, restorations of a very large number of smaller houses, some of which had become dilapidated, have been particularly gratifying in the results obtained. Miss Louise Marshall, with great energy from her wheel chair, has restored Stoll's Alley, which, although among the oldest structures in Charleston, had sunk to the usual negro slum; Mr. and Mrs. Du Bose Heyward's little house on Church Street, where he started his now famous novel "Porgy," was later purchased by Alfred Hutty, the etcher. The recent restoration of the locale of "Porgy," which the author called "Catfish Row," by Mr. and Mrs. L. W. Briggs (Mr. Briggs is a New York landscape architect), is significant. For twenty years it was a dilapidated negro tenement next door to the Heyward Mansion, where Washington resided when he visited Charleston while President. With much work this historic house has been purchased by popular subscription by the Society for the Preservation of Old Dwellings, with a view to its restoration and use as a museum—not a far-reaching nor generally effective method. The pioneer work in this movement of restoration was done by Miss Suzan P. Frost, who earned the name of the "Angel of Tradd Street" by her successful efforts in restoring many of the very old houses in this very picturesque street—one of the very oldest streets in Charleston. The original buildings in this street are uniformly about 200 years old.

A GLIMPSE OF STOLL'S ALLEY, RECENTLY A NEGRO SLUM, NOW RESTORED TO ITS ORIGINAL CHARM

The restoration of the old pirate houses, on Church Street near St. Philip's Church, by Mrs. R. Goodwin Rhett, and the charming little house of very early date in Cumberland Street, by Miss Laura Bragg, curator of the Charleston Museum and lecturer at Columbia University, New York, as well as the little house on Church Street, by Mr. Dawson, are other successful and outstanding examples of the trend.

CHURCH STREET. ST. PHILIP'S (1721) AND THE PIRATE HOUSES IN THE DISTANCE, WITH THE ONCE FAMOUS PLANTERS' HOTEL OCCUPYING A LARGE PART OF THE BLOCK

Zoning, Superzoning and Advisory Services Needed

However encouraging and heartening this tendency may be to rebuild for artists, authors and winter residents these old parts of Charleston, it is imperative that additional definite efforts be made in three directions: (1) to prevent profane encroachments upon this priceless national heritage of ordinary zoning; (2) to control the architectural treatment of restorations by super-zoning for architectural character, and (3) to encourage such restorations and to encourage the replacement of those unworthy structures erected after the earthquake by others in conformity with the original spirit of the street.

Well-meaning but ignorant restorations are a pending danger. Many painful anachronisms have occurred because restorations have been made without competent architectural guidance. To this end a zoning ordinance is essential, but it is only a beginning, since it protects only against commercial encroachments. Esthetic regulation over reconstruction or replacement must be exercised through supplementary legislation for architectural control. Our new state enabling act, and the local legislation based upon it, requires such competent guidance by a permanent secretary of a Board of Adjustment.

Such control, however, requires funds to pay a reasonable salary and fees to competent architects to assist in the design of those features of all buildings in controlled streets so far as they are exposed to public view. A fund established for a few years to carry through the work at this critical period will not only save what now exists, but will go far to recreate much of that which has been destroyed, and preserve for the people of the United States, who have just come to realize the value of this precious heritage, those architectural and historic treasures which, once lost, can never be restored.

The present status of efforts being made to preserve, restore and rebuild old Charleston is as follows:

1. A zoning ordinance has been prepared by the writer, and this is now before a Zoning Commission whose personnel is largely sympathetic with the movement.

2. A new state enabling act is being drafted to permit the tax board to refrain from increasing taxes for from five to ten years on all improvements to property when such restorations, alterations, and reconstruction, according to the Board of Adjustment and a voluntary Architectural Commission, conform to the traditional architectural manner of the street so far as exposed to public view.

3. The Society for the Preservation of Old Dwellings continues efforts in individual cases, and to interest some benefactor in matching with the city, funds to carry forward under *permanent* competent guidance the zoning and the architectural control of restorations and reconstruction.

Machine Finishing for Hot-Mix Pavement in California

By C. S. POPE

CHIEF CONSTRUCTION ENGINEER, CALIFORNIA DIVISION OF HIGHWAYS

Real Advantages

The advantages which have become apparent and the improvement in asphaltic construction which have followed upon the introduction of mechanical spreading and finishing have been summarized as follows:

1. Removal of limitations on plant capacity, due to inability to handle large tonnages on narrow highways.

2. Decrease in unit costs of asphaltic mixture, due to quantity production and quantity handling on the street.

3. Greater uniformity of structure of the asphalt paving base and surface.

4. Decrease in surface roughness to a point where there is now little difference between the best-laid asphaltic type and any other type of pavement in this respect.

5. Production of a uniformly smooth non-skid surface which will be safe in any weather for a number of years.

6. Elimination of poor workmanship through the substitution of machinery for hand labor on all of the more important phases of the work.

7. Reduction in rolling due to the particular arrangement of the paving mixture previous to rolling.

8. Decrease in plant and street costs due to mass production, and decrease in general contract costs due to speed of operations as a whole.

IN this mechanical age, it seems strange that contractors were so many years in adopting the use of power-operated spreading and raking machines for asphaltic concrete. Similar machines were readily accepted for producing smooth, well-compacted concrete pavement, but the practical asphalt paving man always visualized innumerable difficulties which would assail him if he attempted to use similar machines on his work.

Suggestions that it was feasible to spread and rake asphaltic mixtures with machines were met with many objections, since proved unsound. These objections impeded the general adoption of mechanical spreading for two or three years, in California at least, after it was first suggested.

During 1924 and 1925, spreader boxes for spreading macadam rock came into general use and their success gave rise to our opinion that these boxes might be used to spread asphaltic concrete base, if contractors could be induced to try them. Their use on the first job on which they were tried allowed the contractor to take off a number of shovelers, so he was entirely agreeable to the next experiment, which was, to attach rakes to the spreader boxes to rake out the mix. This improvement allowed the contractor to take off one or two more men and convinced us that asphalt concrete could probably be raked and spread by machine methods.

Our spreader boxes were not so economical on the thin 1½-inch surfaces we were then laying in 1926, so we investigated the use of a large drag rake spanning the entire 20-foot width of roadway, to be followed by a strike-off screed. These implements were at first drawn by hand and later by horsepower Both implements operated successfully and gave us a surface smoothness superior to anything we had been able to obtain by hand-raking methods, but did not tend to increase plant output.

Through the cooperation of one of the larger road machinery manufacturers, we secured a standard concrete finishing and proceeded to remodel it at our own expense and thus completed the first attachments for raking and finishing asphalt concrete by mechanical means.

This machine was furnished on trial by the state to one of our contractors engaged in resurfacing a 10-mile section of highway. The working-out of the usual defects which seem inherent in a new machine caused us all more or less concern, but in the end the machine got down to work and turned out an excellent job which showed a roughness of about half of what we had been getting by hand raking. The successful use of this machine was followed very shortly by a decrease in our costs of asphalt concrete paving. So much for the early history of the development of the raking and finishing machines.

In modern resurfacing operations, because of the greatly increased output, great care is necessary in planning, to insure smooth coordination between the plant, the hauling equipment, and the spreading and rolling operations.

Hot-Mix Plant Capacity

A plant of considerable capacity is desirable, and is common practice in California at the present time. Plants producing from 2,500 to 5,000 pounds per batch are considered the economical size. Such a plant will turn out up to 65 batches per hour, if properly arranged, and average outputs of from 500 to 800 tons per day are not unusual. While our specifications limit output to 65 batches per hour, the number may be increased should our laboratory and field investigations indicate that improved methods introduced by the contractor will produce a satisfactory mix in a shorter mixing cycle.

We have found it desirable to premix all of our aggregate before it is passed to the proportioning bins, and this is accomplished either by mixing in

layers at stockpiles or, best, by means of chutes which deposit layers of coarse and fine aggregate on a belt running under the storage bins and which feed the dryer. Weigh-boxes are always placed with their outlets at right angles to the mixing shafts of the pug-mill instead of parallel with the shafts, since the latter arrangement has a tendency to defeat complete mixing of the different sizes of aggregate.

Hauling Equipment

Because of the precarious condition of many of our concrete pavements, it is usually required that all hauling be done with pneumatic-tired trucks. Since the usual load of mixture varies from 5 to 6 tons, the dual type of tire is in common use.

Trucks are usually fitted with convenient coupling devices placed forward of the middle of the truck for ease in attaching the chains by which the spreader boxes are drawn.

Spreader Boxes

Two usual types of spreader boxes are in common use, one of which is equipped with skids on which it is dragged forward, and the other is supported by means of rollers. Both are equipped with more or less satisfactory gates extending the full width of the back, to permit spreading the mixture to the proper thickness. Some difficulty is experienced in making the ribbons of mixture deposited by the spreader boxes lap over each other without rock pockets developing. One of the best methods to secure this result is to cut holes about 6 or 8 inches square in the ends of the spreader box near the front of the box, which will allow sufficient average mixture to run out to make the junction of the ribbons satisfactory.

We have found spreader boxes economical and satisfactory whenever a uniform thickness of surface of considerable depth is to be spread. Some contractors claim little saving where a surface less than 3 inches loose is to be spread. In spreading the leveling course, contractors have resorted to numerous ingenious methods of spreading the surface of the course parallel with the true surface.

Side Forms and Rails

Since it is now our common practice to require that side forms be left in place, such forms are of wood, 3 inches in thickness and as deep as the pavement.

They are supported on hubs at 4-foot intervals and are securely staked to prevent lateral movement. We require all forms to be surfaced on both edges. While it is quite possible to spread the base or leveling course from the wooden side forms, it is not possible to spread surface with spreading machines as at present designed.

It is necessary to make an allowance for compression, and for this purpose it is common practice to lay flat steel rails about ¾-inch to ⅞-inch in thickness by 2½ inches to 3 inches in width on top of the wooden side forms to elevate the finishing machine a sufficient distance above the side forms to allow for compaction during rolling. These rails usually have a V-shaped or tongue-and-groove connection with each other to preserve alignment and are about 10 feet in length. Usually three or four sets of rails are sufficient on the average job, as they are taken up and moved ahead as the work progresses. It is usual to nail the rails temporarily to the side forms.

Finishing Machines

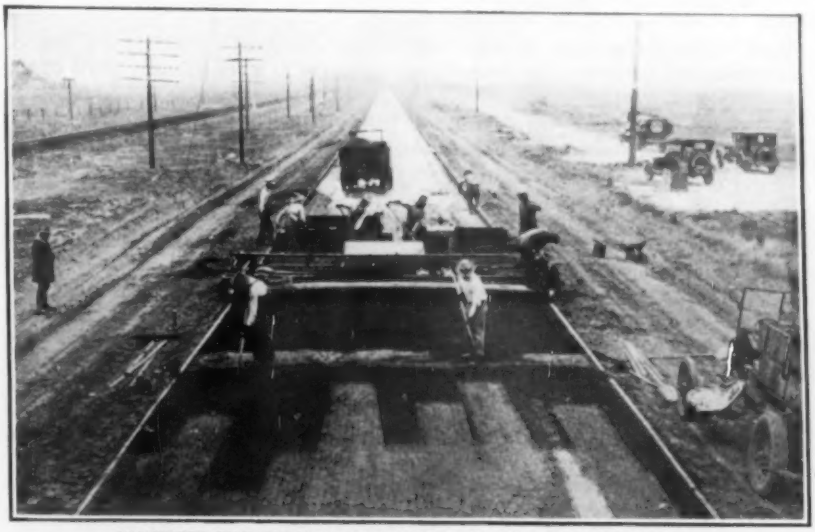
Two types of finishing machines are now in use in California, both of which will spread, rake, and finish asphalt concrete. Both types of machine are motor-driven and consist essentially of front and rear screed plates set about 10 feet apart, having a motion transverse to the pavement at the same time that the machine advances along the side forms. The raking elements are set in between the screeds and consist of steel pins set in heavy pipe.

We require not only spreading but also raking and re-spreading by the rear screed on all of our work, and in this respect our practice differs somewhat from that of other localities where spreading only without raking is a usual practice. Since we have not tried our machines on sheet mixtures, I am unable to say from actual experience whether raking of these mixtures is essential with a screed machine, but from a large experience in laying sheet asphalt by hand methods, I should consider raking such surfaces as essential as raking asphalt concrete.

The two types of rakes mentioned, which I will designate as the pendulum type and the sliding type, represent the different ideas of the manufacturers, but they perform similar work.

The rake teeth, which consist of steel pins from 8 to 14 inches in length and ½ to ⅝-inch in diameter, are set 6 inches or less apart in two lines of double thickness pipe of 2 to 2½ inches nominal diameter. The teeth are adjustable for projection and are fixed in place with set screws. The rake assembly extends the width of the machine, 10, 15, 20, or 30 feet, as the case may be. The essential difference in the two types of machine now in use is the method of raking used.

In one machine, the rake teeth swing with a pendulum motion in opposite directions, which stirs up the mixture in line with the direction of travel.



MACHINE FINISHING A HOT MIX PAVEMENT IN CALIFORNIA

The picture shows a truck backing up to the spreader box over a base widened with asphaltic concrete and painted with emulsified asphalt. The raking and finishing machine is spreading the surface, leaving the typical rake marks after rolling. This machine has the sliding type of rake

In the other machine, the entire rake assembly slides backward and forward between guides, the teeth plowing under and lifting the mixture at each forward stroke, and on the backward stroke slightly assisting the forward movement of the machine.

Both the pendulum and sliding motions are induced by means of an eccentric connected to a countershaft and operating crank arms which swing the rake's teeth or cause the whole raking element to slide.

The second method has, I think, certain advantages over the first, especially for thin surfaces.

The teeth are set to rake from 16 to 20 strokes per minute, and have a travel independent of the forward motion of the machine of from 4 to 8 inches. It is not desirable that the rake speed should be too fast nor the stroke too

A MACHINE-FINISHED ASPHALTIC CONCRETE PAVEMENT IN CALIFORNIA

short. The sliding type of rake may have a longer stroke and be slower than the pendulum type.

Essential features of the raking are the lifting of the coarser aggregate to the surface of the mixture and the formation of compression ridges. The coarse aggregate being lifted to the surface allows it to be reimbedded in the immediate wearing surface by rolling and thus forms a non-skid surface. The compression ridges between the furrows left by the rake teeth have a tendency to assist compression without distortion or travel in the mixture, since the ridges are flattened out sidewise by the roller instead of being driven ahead by it.

Paving Operations

The paving operations in the construction of base and surface are as follows:

Paving mixture heated to approximately 280° F, is brought to the road in pneumatic-tired trucks of 5- or 6-ton capacity.

If a leveling course is to be laid on old concrete, a paint coat of emulsified asphalt is first applied to the concrete base.

The trucks are backed up to spreader boxes and are attached to them by means of a quick-detachable chain hitch.

The mixture is roughly spread about 2 inches thicker than it will be left by the finishing machine and is at once spread to a uniform thickness using the screeds of the finishing machines only, as a usual thing. Some operators use the rakes also, as they think they assist compression. Rolling is begun as soon as the machines have spread a sufficient amount of material. Practically no hand work is required on the base mixture.

Base mixture is usually carried forward for such a distance as to allow a full day's run on surface, or for even a longer distance, so that it will not be necessary to make so many shifts of the finishing machine. On one large job at present under construction, two finishing machines are in use, one on base and one on surface, which obviates the necessity of moving either one back on the job. Machines are usually moved off the pavement at night to permit its use by through traffic.

Surface operations closely follow the methods used in constructing base, with a number of additional operations, however. It is first necessary to lay steel rails ¾ to ⅞-inch thick on top of the side forms, to give the screeds the proper elevation above the side forms to allow for compression in rolling.

The screeds, which are cut at the center, are adjusted to the correct crown by means of hand wheels. The rake teeth are lowered into the mixture and in the sliding type are set at an angle of about 45°.

During operation, it is desirable to carry a wave of mixture about half the height of the front screed in front of that screed, and a smaller wave of mixture in front of the rear screed.

During the operation of the machine, the rakes are forming ridges and furrows longitudinal with the road, and the rear screed is just knocking the top off the ridges, leaving coarse aggregate exposed for rolling. The machines are usually equipped for four-wheel drive and will operate at a forward speed of up to 10 feet per minute.

Rolling

Rolling is done with 10-ton macadam rollers for the first compaction, followed by 6 to 8-ton tandem rollers for final smoothing.

Following the first rolling of the surface, our customary practice is to scatter asphalt coated stone chips, passing ⅜-inch and retained on ¼-inch, over the surface to fill any small voids which may be left in the surface and to provide additional assurance that the surface will be of uniform non-skid texture. Rolling is then continued until no more compaction is possible and the surface is as smooth as it can be made.

Smoothness

Surface smoothness is checked during construction by several different methods devised by ingenious resident engineers. The simplest method is, of course, to use a 10-foot straight edge, but as this requires a good deal of stooping, other means have been devised.

One automatic device consists of a straight edge on three wheels so arranged that a rise or fall of the central wheel of more than ¼-inch rings a bell; another has a similar bell arrangement, but the straight edge consists of two sled runners; while another is a weighted sled which scores the high points as it is dragged after the roller.

The official record of roughness, however, is recorded on a vialog or roughometer attached to an automobile operating at 20 miles per hour. This machine is constantly calibrated by checking its operation over two or three standard sections of pavement which have been run over many times and on which roughness has been accurately determined.

The following tabulation indicates the average smoothness we have obtained on some 200 miles of asphalt concrete pavement laid in the last five years:

Year	Miles Laid	Roughness Index	Remarks
1924	23.84	30.1	Hand finish
1925	24.11	33.2	" "
1926	39.34	24.1	" "
1927	35.35	25.2–14.6	Machine; finish begun
1928	60.81	30.9–14.7	

We have been able to reduce the roughness to as low as eight units on some especially well-finished jobs without sacrifice of the non-skid feature.

We find that roughness increases with each year a pavement is in use. One of our asphalt pavements laid three years ago with a roughness index of 11 now has a roughness index of 14.

Output Per Day Increased

The introduction of finishing machines has, as stated before, greatly increased the average tonnage output of paving plants, and has also decreased the cost per ton as shown in the following tabulation:

Year	Tonnage Max.	Per 8-Hour Day Average	Average Cost Per Ton
1924	244	194	$7.27
1925	319	214	6.43
1926	388	333	5.13
1927	366	352	5.68
1928	574	404	4.89

Naturally, this increase in output has required larger plants, and where a 1,500- or 2,000-pound batch box was the

usual size in 1924, we are now using batch boxes up to 5,000 pounds capacity with the cost of the plant in proportion.

Mixture

The average asphalt concrete mixtures we use for base and surface show the following gradings:

Pass	Base Course	Surface
2½	90–100	
1¼	65– 75	90–100%
¾	50– 65	75– 9
½		60– 75
3	30– 40	40– 55
10	20– 30	28– 36
40	31– 20	23– 27
80	6– 12	15– 20
200	2– 4	7– 11
A. C.	4.5–5.5	4.5–6.5

Stone dust is used in surface only and is usually about 4 per cent of the total mix.

The average costs of materials at our mixing plants are: fuel oil, $1.50 per barrel; asphalt, $15.00 per ton; stone dust, $6.50 per ton; sand, $1.50 per ton; rock, $2.00 per ton.

Cost of Laying Asphalt Concrete

The accompanying comparisons of the cost of spreading concrete by hand and by machine were taken from two jobs that were completed within the last two years.

Output	By Hand 300 tons per day		By Machine 600 tons per day	
Labor:				
Foremen	1 at $8.00	$8.00	1 at $8.00	$8.00
Machine operators			1 at 8.00	8.00
Shovelers	8 at 4.50	36.00	4 at 4.50	18.00
Rakers	1 at 7.00	7.00	1 at 7.00	7.00
Rakers	2 at 6.00	12.00	1 at 6.00	6.00
Dumpman or spreader box	1 at 4.50	4.50	2 at 4.50	9.00
Railmen			2 at 4.50	9.00
Screenings	2 at 4.50	9.00	2 at 4.50	9.00
Tampers	1 at 4.50	4.50	1 at 4.50	4.50
Totals	16	$81.00	15	$78.50
Spreading cost per ton		$ .27		$ .131
Machine rental per day				15.00
Gas and oil per day				1.20
				$16.20
Cost of machine per ton				027
Total cost of spreading by machine per ton				158

Three hundred tons per day would have been a good day's work for a hand crew, but 600 tons per day is not an unusual day's work for machine spreading.

Conclusion

I believe that the more extensive use of machinery in the construction of asphaltic pavements has opened a new era for this material and that with the growth of knowledge as to the economic and engineering considerations which should govern the selection of pavement types, the use of asphaltic pavements in their proper locations will reach proportions sufficient to satisfy its most ardent advocates without detracting from the merits and usability of other types of pavement in their proper environment.

ACKNOWLEDGMENT.—From a paper presented at the Eighth Annual Asphalt Paving Conference.

A Review of Revised A.S.T.M. Specifications for Paving Brick

By F. H. JACKSON
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U. S. BUREAU OF PUBLIC ROADS

DURING the past two years the Committee on Brick of the American Society for Testing Materials has been engaged in revising the Standard Specifications for Paving Brick which were originally promulgated in 1915. The old standard which provided that paving brick in order to be acceptable must pass the standard rattler test as well as certain requirements as to visual inspection, has proved in general eminently satisfactory to both the buyer and the seller of this commodity. In the course of time, however, certain changes as to form and arrangement as well as certain detailed changes in substance have become necessary in order, in the first case, to bring the standard in line with the regulations of the Society as to form and, in the second case, in order to keep pace with changing practice relative to the size of brick used for pavement construction. This review will be concerned chiefly with the changes in substance which have been made, together with the reasons therefor.

Rattler Test for Each Size of Brick

At the time the original standard was issued, most of the brick used for pavements were of the so-called "block" size; that is, 3½ by 4 by 8½ inches. There was consequently no need to take the size or volume of the brick into consideration when interpreting the results of the rattler test. Within recent years, however, there have been introduced and used in this country paving brick considerably smaller than the old "block" size, sizes as small as 3 by 3½ by 8½ inches now being recognized. Inasmuch as the percentage of loss in the abrasion test will be affected by the size or volume as well as by the quality of the brick, it became necessary to modify the old standard either by providing a series of correction factors whereby the loss by abrasion on any size brick could be corrected so as to show the percentage of loss which would have been obtained by the brick had it been of standard size, or by inserting in the specification itself maximum permissible rattler losses of each size recognized. The first revision of the specification made in 1928 provided a series of correction factors which were derived from test data showing the effect of size of brick upon the percentage of loss. Corrections made in this manner, however, did not prove entirely satisfactory to all concerned, and it was finally decided by the Committee to discard this method in favor of the method of indicating directly the maximum permissible rattler loss for each size, provided the manufacturers would agree to reduce the maximum permissible tolerance in length of brick from ½-inch to ¼-inch so as to control more accurately the actual size of brick marketed under a given nominal size. This the manufacturers agreed to do, and the present tentative specification has been prepared on this basis.

Simplified Sizes Recognized in Tests

The present tentative specification recommends the use of the various sizes and types of paving brick recognized by the Permanent Committee on Simplification of Varieties and Standards for Paving Brick of the U. S. Department of Commerce as approved in 1929 wherever possible, and in accordance therewith provides for four nominal sizes of brick, with corresponding rattler losses as follows:

Size of Brick		
Transverse Dimensions Inches	Length Inches	Loss in Rattler Test Per Cent
2½ x 4	8½	26
3 x 3½	8½	26
3 x 4	8½	24
3½ x 4	8½	22

The method of making the rattler test, as well as the various items dealing with acceptance under visual inspection, remain unchanged in the new specification. The requirements governing sampling have, however, been considerably modified, chiefly in the interests of simplification and clarification.

It is confidently expected that the new specification will prove as acceptable to both the producer and the consumer of paving brick as the old standard, and that it will, in addition, satisfactorily care for the question of size of brick as affecting the rattler loss.

Are Postal Employees Subject to Traffic Regulations?

By A. L. H. STREET

SUBORDINATE employees of the Government's postal service often misconceive that because they are engaged in the handling of mail they are wholly exempt from municipal regulations. But, in fact, they are subject to all reasonable city traffic measures, excepting as the same may be in conflict with some act of Congress or regulation of the Post Office Department, and excepting as the particular ordinance may make a specific exemption in their favor.

In the case of Johnson vs. State of Maryland, 41 Sup. Ct. 16, the highest court of the land decided that, since the Department must be presumed to have satisfied itself as to the competency of drivers of trucks carrying the mails, a state is powerless to require a driver to convince state officials as to his competency and to pay a license fee. But the United States Supreme Court said:

"Of course an employee of the United States does not secure a general immunity from state law while acting in the course of his employment. That was decided long ago. . . . It very well may be that, when the United States has not spoken, the subjection to local laws would extend to general rules that might affect incidentally the mode of carrying out the employment—as, for instance, a statute or ordinance regulating the mode of turning at the corners of streets."

Thus it will be seen that there is nothing in the decision cited that is inconsistent with what was declared by the Massachusetts Supreme Judicial Court in the case of Commonwealth vs. Closson, 118 N. E. 653. In that case Closson was a mail carrier in Boston, using a vehicle in delivering mail. He violated city regulations requiring driving on the right-hand side of streets and forbidding a left-hand turn at an intersection without first going beyond the center. He defended a prosecution on the ground that his employment rendered him immune. After first pointing out that intent to violate the regulations was not an essential element of the offenses, because they were only misdemeanors, the Massachusetts Court said:

"The designated streets or ways are not, however, instrumentalities created by the general government, where 'exemption from state control is essential to the independent sovereign authority of the United States within the sphere of their delegated powers.' . . . While undoubtedly they are post roads, . . . yet the ways remain public ways laid out and maintained by the commonwealth, which has the exclusive power not only of alteration, and of discontinuance, but to make and enforce reasonable regulations for their use. Nor do the facilities thereby afforded for transportation of the mails confer extraordinary rights upon mail carriers to use the ways as they please, or necessarily, or impliedly, do away with the power of supervision and control inherent in the state."

In the case of Hall vs. Commonwealth, 105 S. E. 551, the Virginia Supreme Court of Appeals upheld a conviction of the operator of a Government mail truck for driving through a town at a speed of more than 15 miles per hour, in violation of a Virginia statute. The Court said that the evidence before it did "not show that the speed limit provisions of the state statute are at all in conflict with the . . . direction of the Postmaster General, or that they at all interfere with the performance by the accused of his duties as an employee of the Federal Government."

In a Philadelphia case decided more than 100 years ago (United States vs. Hart, Fed. Cas. No. 15,316) it was held that a mail carrier was subject to punishment under an ordinance prohibiting driving at immoderate speed, or the driving of a vehicle on runners without bells on the horses. But the Court held that the fact that the carrier was subject to arrest did not justify making the arrest under such circumstances as to stop the mail.

In the habeas corpus case of Willman, 277 Fed. 819, the United States District Court for the Southern District of Ohio recognized the soundness of the decisions above cited, but decided that since existing regulations of the Postmaster General prescribed a certain type of oil headlight to be used on a mail truck, the driver was not subject to punishment as for volating a state law requiring a more effective headlight.

From the court holdings cited, it seems quite clear that postal employees are just as amenable as other persons to traffic regulations that do not make requirements that interfere with the performance of their duties; unless the regulations carry specific exemptions.

It is believed that if the police department of a city will complain to the postmaster, or to the Department in Washington, on failing to get results through the postmaster, against persistent and flagrant violations by mail truck drivers, of stop and go regulations, and ordinances against overtime parking, blocking crossings, etc., the drivers will receive such orders from their superiors as will correct the situation. At least, it would seem that such course ordinarily might well be adopted before instituting prosecution.

Boston Chamber Urges Safety Program

ADOPTION of a five-year construction program involving the installation of four devices which it is felt will reduce the hazards encountered by pedestrians on Boston streets, has been recommended to the Boston Traffic Commission by the Chamber of Commerce of that city.

Pedestrian safety islands at intersections, safety zones at street-car stops, pedestrian crosswalk markings, and traffic signal light systems—either at isolated intersections or in progressive arrangement along main routes in which pedestrian protection is clearly defined—are the devices suggested by the Chamber.

Deploring "the appalling record of accidents to pedestrians upon the highways of Boston," the Chamber through its Traffic Control and Safety Committee has advised the Boston Traffic Commission that it believes it lies within the province of that body, or the municipal departments represented on it, to attack the traffic safety problem effectively.

Veteran Traffic Supervisor for Heavier Fines and Better Judges

CAPTAIN EUGENE CASEY, who recently retired as Supervisor of Traffic of the New Orleans Police Department, after nearly 23 years of police service, believes that people do not respect the traffic laws as they should.

Interviewed regarding his colorful career by William Wiegand of the New Orleans *Item-Tribune*, Captain Casey said:

"New Orleans people regard traffic laws just about like most of them look upon prohibition—a good thing, but not to be applied to them. They have little conscience when it comes to traffic violations. There are two ways in which the situation in New Orleans can be improved:

"First, the penalty for violating the parking law should be not less than $25. No excuses should be accepted for such a violation. With such a heavy fine imposed, loss of time by the police in hauling cars to the police pound would be eliminated.

"Second, but more important, the minor courts should have the same type of judges that the criminal and civil courts have."

Sensible Truck Operation in Minneapolis

Abstract of a Report of the City Comptroller Gives Valuable Cost Data from Street, Sewage and Garbage Departments

A Plea for the Municipal Garage

The Cost Accounting Division of the City Comptroller of Minneapolis has furnished pertinent examples and pointed figures which might well represent conditions in any city. This study shows the advantages to each department as well as to the body of taxpayers, of a centralized control of the operation and repair of municipal trucks.

OPERATION and maintenance costs have been assembled by various municipal departments in Minneapolis at the request of City Comptroller Dan C. Brown, by Gustave A. Moe, Cost Accountant. The value of these costs to executives is unquestionable. Data assembled on truck costs were recently used when a purchase of 24 new trucks was made for the garbage collection department.

These costs were used to establish rental values. For use in charging for service rendered, a separate account of each piece of equipment is set up. The earnings by it are used to clear the expense. The expense includes all items such as operator's time, gasoline, oil, grease, repairs and labor and parts, depreciation, garage service and burden.

These costs are also valuable in determining the question of replacements, depreciation and obsolescence, including a loss in case of fire or damage, in ascertaining economic operations of equipment and in controlling the operators with regard to their care of equipment.

Accounting Methods Must Be Standardized

In comparing costs, it is essential that each department be consistent in making charges against the equipment. These comparisons show results of each piece and class of equipment, as will perhaps be more clearly understood by the following comparison of truck costs in the paving, sewer and garbage collection departments.

Paving Department

A group of four 3½-ton trucks shows the total operation and maintenance cost to be $2,917.86; the hours operated in 1928, 6,324; the cost per hour, 46.1 cents; mileage, 15,269 miles; cost per mile, 19.1 cents. When depreciation, storage and overhead are included, the hourly cost is 78.2 cents, and the cost per mile 32.4 cents, not including the drivers' time.

Sewer Department

A group of six 5-ton trucks in this department shows the operation and maintenance cost in 1928 to be $4,484.63; hours operated, 11,034; cost per hour, 40.6 cents; miles operated, 26,265; at a cost of 17.1 cents per mile. When depreciation, storage and overhead are included, the hourly cost is 91.1 cents and the cost per mile 38.3 cents, not including the drivers' time.

Garbage Collection Department

The garbage collection department shows the cost of trucks with operator's time included for a fleet of 40 trucks. The average cost per mile is 30.7 cents, and the cost per mile not including operators is 12.7 cents per mile.

Rental Rates

The rental rate to jobs is $1 per hour for trucks, plus drivers' time, which makes the total charge per hour for these departments average $1.75. The outside rental rate from private truck operators is $2.50 per hour.

The paving department rented equipment from private parties to the extent of $22,000. If a city equipment bureau had rented the equipment at a city rate, a considerable saving could have been made. Other departments also rent some equipment from private parties. Of course, there are times when equipment must be rented from outside parties, but if the municipal rates are lower, outside renting should not be done except in extreme cases.

The maintenance cost of work performed by outside parties is considerably higher than that of work done by city repair shops. This is caused, no doubt, through purchase of equipment where only limited service is given by the vendor. For instance, two trucks were repaired by a private party in 1928: one, a 1923 truck at an expense charge of $1,053.29; the other, a 1924 truck, had an expense charge of $1,250.33.

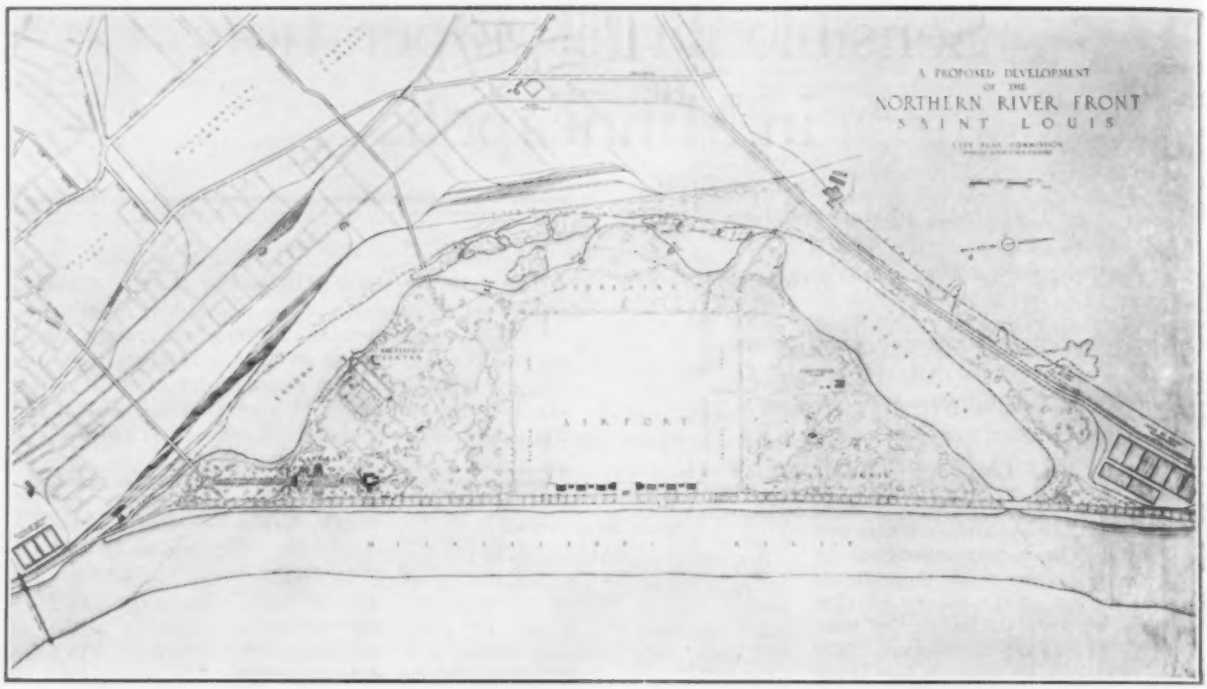
The Management and Control of Equipment

Management and control of equipment in Minneapolis is now handled by the various departments under the supervision of various heads. This gives divided authority in control and use. Some inconvenience in renting from one division to another is incurred, which brings out the fact that no one person knows exactly what equipment all the departments own. There is, no doubt, surplus equipment which could be put into operation. From a management and control standpoint this is important.

At present, the engineer who has other responsibility such as supervision of pavement construction, curb or gutter or sewers, must also supervise the purchase, repair and maintenance of his equipment. All this requires considerable time and thought. He is also required to buy only to cover his own needs, as he cannot depend upon service of equipment belonging to others, for it may not be available when it is needed.

Under the proposed plan of central control of equipment in Minneapolis, the management would be in the hands of a competent mechanical engineer who would relieve the construction engineer of the responsibility of the many problems concerning the equipment, and by the use of cost data assembled for him, he could place a central control plan on an efficient and economic basis.

Such a plan would warrant a central repair shop, equipped to handle all heavy machine work, all overhauling and rebuilding. It would fix the responsibility of equipment service upon one central authority. It would keep equipment continually employed by changing over equipment used in summer for snow removal in winter, etc. Other details concerning management and control could be worked out in a plan that would tend to materially reduce costs.



A Great City Makes Plans for Notable Riverfront Improvements

By F. E. LAWRENCE, JR.
SECRETARY, CITY PLAN COMMISSION
ST. LOUIS, MO.

THE development of the northern and southern waterfronts of St. Louis for recreational and airport purposes is recommended in a report dealing with those sections which has just been published by the City Plan Commission.

Northern Riverfront Development

For about seven miles between Bissell's Point and the Chain of Rocks is a vast low-lying, unimproved area, subject to repeated overflow from the river, and occupied to a large extent by railroad yards. In recent years, the city of St. Louis has acquired for park purposes a strip 1½ miles long just south of the Chain of Rocks water-works and between the river and Riverview Drive, but this land has been little developed.

The City Plan Commission now recommends that the river channel be straightened in this vicinity through the diversion of the water to a new channel east of Cabaret Island. The area between the present and the proposed channel, comprising approximately 3,150 acres, or 4.92 square miles, would be developed for public use and enjoyment, as shown in the accompanying chart. Part of the area would be devoted to an airport and part to a large public park.

St. Louis has long needed a first-class airport within easy access of the main downtown business center. The proposed development offers possibilities of a first-class airport. It would be practically level and filled to an elevation above all known high-water stages. The area surrounding the airport would be entirely unobstructed, inasmuch as large recreation spaces would be on three sides, with the Mississippi River on the fourth side. It would have the advantage of providing for both land and water planes, as well as giving ample space for automobile parking and sites for necessary service buildings.

The plan also proposes that elevated highways be provided from this site to important arteries in the Major Street System, to give the desired access to the downtown district as well as to every other section of northern and western St. Louis.

The Recreational Area

For the recreational area there would be available 1,288 acres of park land, and 1,172 acres of water surface in the form of lagoons for yacht harbors and bathing beaches. This proposal also embraces a plan for the development of an eighteen-hole golf course.

The method of developing this area is as follows: Cabaret and Mosenthien Islands at present have an average elevation of 9.0 on the city datum. This is 20 feet below the highest water of which there is record, namely, the flood of 1903.

To secure a fill of 20 feet over an area of 3 square miles (estimated land area of proposed park and airport) is an undertaking of considerable magnitude. With the usual processes of filling, the cost would be very great. On the other hand, it is a commonly known fact that up to a certain point, the river will create large fills at a comparatively small cost when properly controlled. Numerous instances of this occur in the St. Louis district where dikes have been constructed and new land has been created. This was done, for instance, at the city's North Market Street dock. It is not a rapid process, but one whose economy justifies its adoption if time is not an important factor.

To carry out the plan it is suggested that the first step should be a gradual straightening of the river channel under the direction of United States Government engineers. As this straightening of the river was effected, back areas would be partially filled by the construction of dikes. When the river channel had been fully straightened, levees would be constructed on either side of the new channel.

Hydraulic Filling Necessary

The amount of fill deposited by the river would be more or less uncertain in quantity. In no case would it be suf-

ficient to bring the elevation of any of the land above flood stage. With the final establishment of the straightened channel, hydraulic filling would be necessary in the areas back of the new levees. Since all of the land back of the new levees would be fully protected from flood, it is not considered necessary to bring all of this land above flood stage, which would necessitate a fill of 20 feet. The airport, River Drive and main highways should, of course, be kept above flood stage, but certain of the park areas might well be somewhat below flood stage. It is estimated that approximately one-third of the total reclaimed area would require a fill of 20 feet and the remaining areas would have a varying but lesser amount of fill. It would not be necessary, for instance, to secure any substantial amount of fill in the old river channel, which, according to the proposed plan, would be devoted to water areas.

Estimates of cost of the various elements of the plan may be summarized as follows:

Acquisition of land (including riparian rights, damages and contingencies)	$2,500,000
Filling of land	5,000,000
Levees and bank protection	1,500,000
Construction of airport	2,500,000
Park construction	3,000,000
Riverfront elevated thoroughfare	4,650,000
Viaducts at Adelaide and Calvary Avenues	3,500,000
Total	$22,650,000

It is estimated that the full realization of the project would require between ten and twenty years. Methods of paying for the improvement have been considered in the preparation of the plan, and it appears that long-term bonds offer the most logical method of financing.

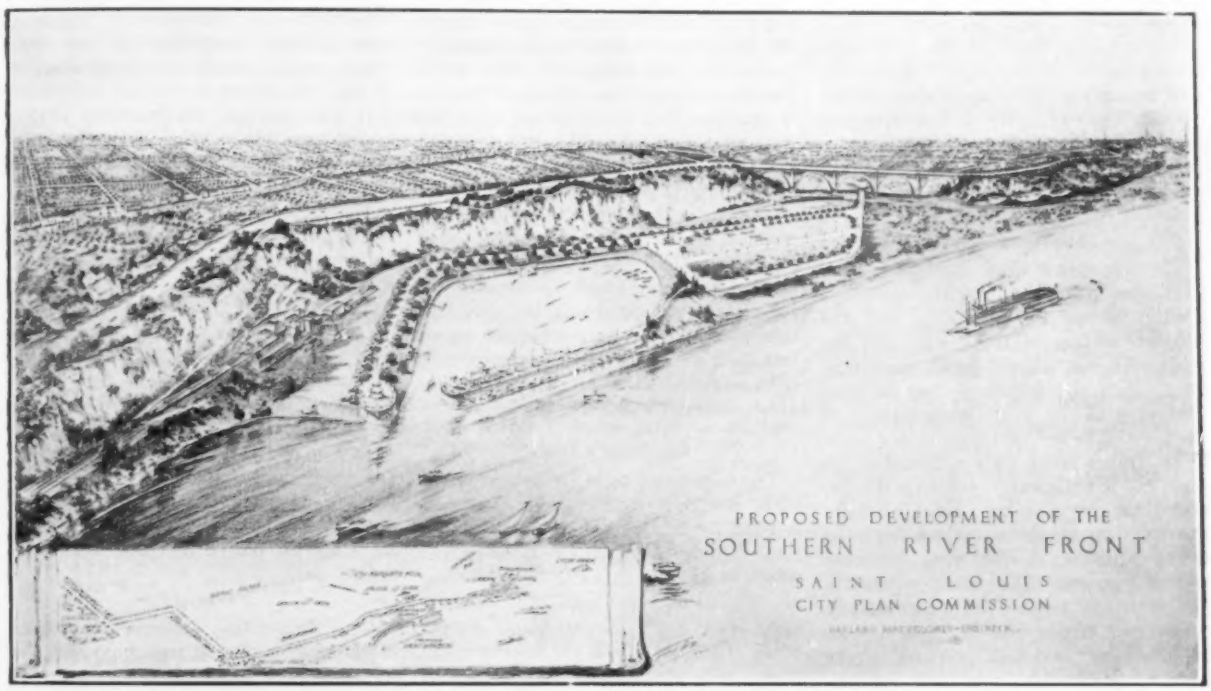
Southern Riverfront Development

Of the approximate six miles of waterfront in the southern part of the city, none of it is used for public recreational purposes. Much of this frontage is privately owned; some of the rest is devoted to fairly intensive industrial use, and some remains in a more or less unimproved state. From the Municipal Bridge to President Street, and from Bellerive Park to the River des Peres, most of this land is of very little use except for industrial purposes. However, between President Street and Bellerive Park, a distance of some 2½ miles, there is a bluff varying in height from 50 to 75 feet. A small portion of this bluff, 900 feet, acquired in 1908 and now known as Bellerive Park, affords a most interesting view of the river and is proving attractive to an increasing number of our citizens. The park contains only 5.67 acres, which is totally inadequate. The plans for the development of this section propose a bluff drive from Bellerive Park north to the Marine Hospital, 2½ miles long; a yacht harbor; and a 37-acre park along the bluff between Gasconade and President Streets.

The present study has shown that it is entirely possible to acquire a limited amount of the bluff and to provide a most interesting and scenic drive without seriously impairing the rights of private property owners. It is suggested that from Bellerive Park to Delor Street the bluff drive be constructed below the top of the bluff, which would cause both the drive and the traffic to be well below the home sites along the top of the bluff. It would be purely a pleasure drive, and for this reason no connections are proposed with the abutting private property. It is believed that a 40-foot roadway would be of sufficient capacity. North of Bellerive Park, for a distance of one mile, there would be a reinforced concrete trestle structure, as shown in the accompanying illustration. Where the contour of the land permits, observation points would be constructed. This would avoid the necessity of parking along the main highway.

The proposed extension of the riverfront drive contemplates the eventual connection of this driveway with arteries lying south of the city, which would give access to any ultimate outer park and boulevard scheme. It is estimated that the river bluff drive would cost approximately $3,894,500, divided as follows:

Property acquisition	$776,500
Construction of bluff drive	2,355,000
Construction of yacht harbor	675,000
Development of marine park	88,000
Total	$3,894,500



EDITORIAL NOTE.—For many years there has been public demand that conditions along the riverfront of St. Louis be improved. In 1916, when the City Plan Commission began its studies of a comprehensive plan, it included in the problems to be considered that of putting the waterfront to better and more intensive use. In 1928, after several years' study, the City Plan Commission published its first report, which covered the area known as the Central Business District. Immediately after this report was completed, a second study was initiated. It is with the results of this second study, just published in the form of a report entitled "Plans for the Northern and Southern Riverfront, Saint Louis, Missouri," that the foregoing article is concerned.

Interest and Impartiality —Good Tools for Testing Cast Iron Pipe

By W. R. CONARD
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THE word "testing," when applied to cast iron pipe and used in its broader sense, can be made to include such things as the apparatus used, the methods employed with the apparatus, calibrations, gaging, analysis, visual examination and weighing. There are also a number of others of less importance, all of which, singly or collectively, go to make up a measure of the suitability of the pipe for the service it is intended it shall perform.

Inasmuch as some of the tests mentioned above require special knowledge and experience, their application to determine the suitability of cast iron pipe for use places this work within the range of the service of engineering and it becomes therefore an engineering function.

Apparatus Used

The apparatus used for testing cast iron pipe primarily consists of a hydraulic press, the machines for the physical testing of the metal, and the tools such as caliper, gages, hammers, etc., which the inspector uses in connection with the visual examination of the pipe. The hydraulic press is a piece of apparatus which seals each end of the pipe, fills it with water, exhausts the air, and then, by a pump acting usually through an accumulator, raises the water pressure in the pipe to some specified figure. The other apparatus for physically testing the metal usually consists of tensile and transverse testing machines, in which prepared pieces of iron, usually called test bars, are subjected to tensile and transverse stresses to determine strength and resiliency. The inspector's tools are a pick hammer, a caliper for measuring the thickness of the metal, and gages to further calibrate the different dimensions of the pipe and fittings.

Methods of Testing with the Hydraulic Press

After the pipes are cleaned and chipped and have undergone examination on the skids for dimensions, quality and appearance, they are put under hydraulic pressure and tested for strength and porosity. In the specifications this is called the "hydrostatic" test. There was a time in pipe making when this test was applied in an adequate manner to all sizes, as it still is in the case of larger pipe. The present practice, however, in testing 3- to 20-inch pipe can be termed adequate only if the specified pressure applied for as short a time as 30 seconds is considered satisfactory. The reason why the pressure is held for such a short period of time is that the facilities for this part of the operation of producing pipe have in most cases been lost sight of in the endeavor to keep up quantity production, and the necessary room and apparatus for the testing have not been provided by the manufacturer to the same extent as have the facilities for the other manufacturing operations. On the importance which the purchaser attaches to the hydraulic tests would therefore depend the period of time to be specified that the pipes are to be held under pressure before they are accepted.

Examination of Physical Properties

The apparatus for demonstrating the physical properties of the iron are usually the standard tensile and transverse testing machines fitted up to take the type of test piece which the specifications call for. The pieces for the tensile test have an approximate 1 square inch cross-sectional area and for the transverse the area is 2 x 1 x 26 inches.

Inspector's Tools

The inspector's tools are primarily the pick hammer with which the pipe is tried for hardness and visible indications of defects are explored, the caliper which is used to measure the thickness of metal and sometimes other dimensions, and gages for checking dimensions. The other tools are measurement rules, steel tapes, and minor special or odd tools used at intervals as a check.

Some purchasers require a check on the chemical components, and where this is required, the inspector has to have sufficient knowledge of iron to know something of the grades by visual examination, and to tell whether the proportions are right when the foundry analysis is made.

Importance of Visual Examination

One of the most important functions of a proper testing of cast iron pipe is the visual examination of the individual pipe by the inspector. To be able to perform this part of his work properly, the inspector must have a good working knowledge of molding, pattern making, machine shop practice, chemistry and, most important of all, the cause and effect of the things that can and do happen in the manufacture of the pipe. Also of considerable importance is a knowledge of the principles of engineering as applied to the uses to which the pipes are to be put. All of these, with good common sense and sound judgment, enable the inspector to examine a pipe or special and to quickly determine the suitability of that particular pipe or special for the use for which it is intended.

Other duties connected with the inspection and testing are that the inspector shall witness the tension and transverse tests to determine the general physical properties of the iron, maintaining a check on the production of the test pieces as well as the chemical analysis, and to maintain supervision over the coating as well as the weighing. Many purchasers also keep the inspector informed as to their requirements on delivery, so that he, being directly on the ground, sees that these requirements are adhered to.

Weighing

One of the last tests of pipe before loading for shipment is to weigh the individual pipe or casting to see that it comes within the limits for its size and class. If the pipe is too light, it is either placed in a lighter class or put among the culls; and, if too heavy, it is either marked down to the top limit, placed with a heavier class, put in the culls, or, if too far out of the way, it may be scrapped.

Summary

It is difficult to describe the details of the testing of cast iron pipe and the methods used, for there are as many as seventy defects that may make a pipe unfit for use; therefore, the individual visual examination is a most important part of the testing and much depends on the extent of the training and experience of the inspector and his attitude toward his work. If he has had the training, is interested in what he is doing and why he is doing it, and assumes an unprejudiced attitude toward the material and those producing it, and also is willing to place himself in the position of trying to learn something every day, the purchaser who is having the materials tested by such an inspector can usually rest easy and feel assured that his interests are being properly looked after. It is to be conceded that unless the work of inspection of pipe and castings is honestly and intelligently performed, the purchaser is spending money uselessly.

ACKNOWLEDGMENT.—From a paper read before the New England Water Works Association.

Why Charge for Sewerage Service?—Why Not?

By FRANK A. MARSTON
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THIS is a study of the methods of raising funds to pay the annual cost of the operation and maintenance of sewerage systems, including pumping-stations and treatment plants; and to pay that portion, if any, of the annual fixed charges, such as interest and bond maturities, resulting from the construction of sewerage works not otherwise provided for by tax levy or assessments.

It has been the usual practice to obtain all of these funds from the general tax levy apportioned *ad valorem* over the property of the entire municipality. The disadvantages of this method have led to the adoption, by a few cities and towns, of annual charges or rentals for sewerage service similar to charges made for water by water departments. These annual charges or rentals for the use of the sewers are in addition to assessments levied at the time the sewers are built. The benefits already shown by the adoption of such methods have aroused widespread interest and discussion.

Such methods can be adopted more readily when the system is started or when a treatment plant is built.

Enabling Acts

Laws have been passed in at least six states (Ohio, Pennsylvania, Wisconsin, New York, Michigan and North Carolina) enabling cities, towns, districts or other municipal corporations to make charges annually for sewerage service. The subject is under active consideration in some other states, and in Massachusetts and Texas the plan has been used by several cities and towns without a special act. The General Laws of Massachusetts provide that any municipality, except Boston, may establish annual charges for the use of common sewers. Some private corporations in New Jersey are operating sewerage systems and are collecting rentals at rates approved by the State Board of Public Utility Commissioners. Ohio was the pioneer state in passing a sewer rental law (1923).

Charges Based on the Use of Water

The annual charges for sewerage service may be computed on the basis of the water used, by one of the first four methods listed in the right-hand column of this page.

Method Used in Dayton

An example of method No. 1 of charging for sewer service is that in use in Dayton, Ohio, where a new sewage treatment plant is about ready for operation. The sewer rental law went into effect February 1, 1928.

Based on the quantity of water used per quarter-year as shown by meter readings, the rates for property within the city limits are as follows:

First 3,000 cu. ft. or less, $1.00
More than 3,000 cu. ft. and less than 10,000 cu. ft., $0.30 per 1,000 cu. ft.
More than 10,000 cu. ft. and less than 20,000 cu. ft., $0.25 per 1,000 cu. ft.
More than 20,000 cu. ft. and less than 100,000 cu. ft., $0.20 per 1,000 cu. ft.
More than 100,000 cu. ft. and less than 500,000 cu. ft., $0.15 per 1,000 cu. ft.
More than 500,000 cu. ft., $0.10 per 1,000 cu. ft.

There is a minimum charge of $1.00 per quarter year or part thereof. For property outside the city limits the rates are about 25 per cent higher.

For prompt payment of bills a discount of 5 per cent is allowed, while for failure to pay promptly, an additional charge of 5 per cent is added. Bills are payable quarterly with the bill for water. The rental is made a lien on the property. In case of failure to pay the charge, it can be put on the tax duplicate and collected as other taxes are collected. It is estimated that these rates will produce sufficient revenue to pay the entire cost of operation, maintenance and fixed charges of the sewerage works.

Washington, Grand Rapids and Wellesley

Method No. 2 is followed in the Washington Suburban Sanitary District of Maryland, where the operating and maintenance costs of both water-supply and sewerage works are met by a meter service or "ready-to-serve" charge and a water consumption charge.

A similar schedule, but for sewerage service only, has been proposed for Grand Rapids, Mich., in which there is a "ready-to-serve" charge based on the size of meter and a water consumption charge, as follows (reference 11):

Ready-to-serve charges vary from $6.00 per year for ⅝-inch and ¾-inch meters to $381.00 per year for 6-inch meters.

Consumption charges vary from 5 cents per 100 cu. ft. for the first 2,200 cu. ft. used annually to 2 cents per 100 cu. ft. for all water used in excess of 200,000 cu. ft. annually.

Wellesley, Mass., makes an annual minimum charge of $6.00, together with $1.00 additional fee for each water meter, in excess of one, used on each premise; and an additional charge at the rate of 18.5 cents for each 100 cu.

Outline of Methods for Annual Charges

Charges Based on the Use of Water

1. A graduated scale of rates depending on the amount of water used as shown by readings of the water meter, and by an estimate where no meter is installed, or where the user has a private water-supply. A minimum charge is usually provided.

2. A two-part rental.
   (a) A "ready-to-serve" fee graded according to the size of water meter installed or other basis.
   (b) A graduated scale of rates or estimates as in No. 1, or a uniform rate as in No. 4.

3. A percentage charge added to or based on the bill for water.

4. A uniform rate for all water consumed.

Charges Based on Flat Rates

5. A flat rate per house connection with suitable corresponding rates for apartment houses, industries and other types of property.

6. A scale of rates depending on the number and kind of fixtures connected to the sewer system.

7. A combination of Nos. 5 and 6.

Charges Based on Character of Sewage

8. A schedule of charges based not only on the volume of domestic sewage or industrial wastes but also on the degree of pollution as measured by relative amounts of suspended matter, the biochemical oxygen demand, or some other factor.

ft. of water, in excess of 2,200 cu. ft. used per year.

Other Massachusetts Cities

The No. 3 method is in use at Framingham, Mass. A sewerage service charge of 35 per cent of the water bill is rendered quarterly at the same time the water bills are sent out. As in the case of other methods, special adjustments are made where private water-supplies exist or where the volume of water discharged to the sewers is materially different from the water meter readings.

In Brockton, Mass., a sewer rental plan, like No. 4, has been in use since 1894. At present the charge is 15 cents per 100 cu. ft. of water as shown by the water meter readings, but it has been as high as 22½ cents. If all of the water passing the meter is not discharged to the sewer, the property owner must install a meter to measure such water or else pay a charge based on the whole amount.

For the year ending November 30, 1928, the Brockton Sewer Department obtained funds for maintenance, operation and fixed charges from the following sources:

Sewer rental	61.0%
General tax	37.5%
Other sources	1.5%
	100.0%

Charges Based on Flat Rates

Where water meters are not in general use, the charges must be based on other means, such as:

5. A flat rate per house connection with suitable corresponding rates for apartment houses, industries and other types of property.

6. A scale of rates depending on the number and kind of fixtures connected to the sewer system.

7. A combination of Nos. 5 and 6.

A combination of flat rates and fixture rates, method No. 7, is in force at Delaware, Ohio. Some of the representative items in the schedule of charges per year are:

Dwellings and apartments
One-family (one connection), $4.00
Hotels
For each room with bath, $1.75
Rooming-houses and fraternities
$4.00 plus $1.00 for each person renting a room therein
Stores, restaurants, office and mercantile establishments
Private toilets, each $4.00
Public toilets, each $8.00
Factories and shops
For each employee, from $1.00 to $0.60 according to number employed
Churches
For each toilet, $2.00
Colleges
For each registered student, $0.75

Such a schedule, if worked out in an equitable manner, can be used successfully and is applicable to municipalities where the water services are not metered.

Charges Based on Character of Sewage

Where the sewage is treated, the cost of operation and maintenance of the sewage treatment plant is influenced by the character of the sewage, including industrial wastes, ground water and other leakage. Certain industrial wastes may add a considerable burden of expense because of their character; whereas relatively clean rinse waters, although of similar volume, would not involve a corresponding cost. To meet these conditions it is possible to set up the following:

8. A schedule of charges based not only on the volume of domestic sewage or industrial wastes, but also on the degree of pollution as measured by relative amounts of suspended matter, the biochemical oxygen demand, or some other factor.

Such a system was proposed by Tanner for Dallas, Texas (reference 13). Where conditions warrant, such a method can be worked out in considerable detail. With other methods of financing, it may be necessary to select certain industries and to charge them special rates based on the quantity and quality of industrial wastes discharged to the sewers.

Objections to Sewerage Service Charges

The billing and collection of rental or service charges requires clerical assistance and involves expense and other complications of administration.

Some property owners may prefer to pay one bill for taxes rather than to have a separate bill for sewerage service.

The billing of charges for service as well as for the cost of the connection may cause some property owners to delay making a sewer connection until forced to do so by ordinance.

Service charges cannot be billed until sewer connections are made, and any unforeseen delay in construction may delay the receipt of funds, thereby throwing an unexpected burden on other sources of revenue. This would apply particularly to the first year or two after starting to build the system.

A residential community does not require the various classifications of service found in an industrial city, and therefore the complications of a rental system may not appear justified.

It may be claimed that the municipality as a whole should bear a substantial part of the burden. In Massachusetts, the municipality as a unit must pay at least one-fourth of the total cost of construction.

Advantages of the Service Charge Plan

Any equitable plan by which funds can be obtained continuously for sewerage operation and maintenance without depending on appropriations from the tax levy will have the following distinct advantages:

Funds can be provided continuously and adequately to ensure efficient operation and the best service.

The source of revenue will not be in direct competition with other more popular budget items in the tax levy.

The funds will not be subject to economy cuts at the whims of disinterested officials.

Each property owner will pay only his fair share of the cost in accordance with his use of the system.

Taxpayers having no sewerage facilities will not be required to pay for maintaining the service rendered others.

The sewerage system and especially the sewage treatment plant, if any, can be maintained in efficient condition and thereby avoid waste of public property.

The danger of lawsuits because of pollution from the discharge of untreated sewage or other nuisance will be avoided if the sewage treatment plant can be kept in good condition.

The availability of funds will permit engaging trained operators and adequate labor, and will make possible the operation of the sewerage system as a self-supporting public utility comparable with the water-supply system.

The funds can be limited in use to the purposes intended, which, as the New York law puts it, are the "payment of the cost of the management, maintenance, operation and repair of the sewerage system, including treatment and disposal works."

While there may be ample justification in theory for obtaining funds from the tax levy for these purposes, the facts remain that many sewerage systems have suffered seriously and sewage treatment plants have been ruined for lack of funds, whereas these troubles might have been avoided if an annual service charge plan had been in operation.

General Principles Regarding Service Charges

Definite rules for preparing a schedule of service charges cannot be given, because conditions vary so in individual problems. There are some general principles, however, that it may be well to consider.

The sewerage system is an important public utility and as such should be provided adequately with funds to permit it to render the service for which it was designed. Those who benefit should pay a price commensurate with the service received, based on the fair average cost of rendering that class of service. The prices charged for the various classes of service should be in proper proportion one to the other and sufficient in aggregate amount to provide the required

sum. The rates should be selected so as to provide as nearly as can be estimated for the average costs over a period of at least five years and perhaps ten years in the future.

Where the water services are metered, the meter readings may serve as a convenient basis for determining equitable sewerage service charges. Under some conditions, a more equitable distribution can be made if the charge is divided into two parts—a "ready-to-serve" charge, and the "extent of use" charge.

The "ready-to-serve" charge is a charge on account of the general benefit received and should be collected from every owner whose property has a connection to the sewerage system, whether sewage is discharged or not. This is similar in principle to the meter service charge levied by many water departments. It also serves as a minimum rate and tends to lower the rates charged for actual use.

While it may be argued that a property owner, having paid for the house connection and having been assessed on a "frontage and area" or other basis for a part of the cost of the common sewer, has already purchased the privilege of being connected to the system, there remains a considerable portion of the plant (especially if treatment is provided) to the maintenance of which the property owner should contribute whether sewage is discharged or not. This can be accomplished through the "ready-to-serve" or minimum charge.

Annual interest and bond maturities or sinking-fund payments and certain clerical and administrative expenses must be met regardless of the volume of sewage collected. Ground-water leakage adds to the volume to be treated without being affected by the discharge from fixtures. There is justification therefore, in levying a charge that is not dependent on the extent of use of the system.

It may not be practical to make the "ready-to-serve" charge pay for the full amount of the interest and bond maturities, not otherwise provided for, because thereby the average householder might be forced to pay an undue share, but it may be reasonable to collect in this manner a portion of that sum, leaving the balance together with operating expenses to be covered by the "extent-of-use" charge. Where the owner has been assessed for the house connection and part of the common sewer, there is not the basis for determining the "ready-to-serve" charge that is available in the case of water meter service charges.

The "ready-to-serve" charge may be graded according to size of water meter, number of families served per connection, area of land, or other means that will distribute the burden fairly and be easy of application. From $3.00 to $6.00 per year per connection for the average residence is charged in some of the schedules now in force.

The "extent-of-use" charge will depend largely on the quantity of water used as shown by water meter readings, unless conditions are such as to warrant an additional classification based on the character of the sewage discharged. Adjustments must be made and special rates charged for cases to which the usual rule is not applicable.

Summary

The foregoing discussion has been limited to general considerations, and many important details have been omitted. The conditions in any particular problem will affect the determination of equitable service charges. That there is merit in this method of providing for the cost of operating and maintaining sewerage works is evidenced by the number of municipalities that either have adopted it or have it under serious consideration. It is particularly applicable and can be more easily put into effect where a sewage treatment plant is being constructed. To change over an old system may involve troublesome complications, but is not necessarily prohibitive. The importance of providing adequately for the efficient and continuous operation and maintenance of sewerage works cannot be overemphasized. A reasonable method of financing through annual service charges makes such operating conditions possible and is worthy of careful study.

References Relating to Charges for Sewerage Service

The following references will be of value in studying the details of the several ways in which service charges have been made. The letter following the reference indicates that the article contains examples of (L) laws of ordinances and (R) schedule of rates:

1. A Plan for Meeting Water-Supply and Sewerage Costs.—R. B. Morse and Abel Wolman. Eng. News-Rec., June 2, 1921, p. 944 (R).
2. The Washington Suburban Sanitary District. —R. B. Morse. Proc. Am. Soc. Mun. Imp., 1926, p. 181 (R).
3. Rates of Charge for Sewerage Service.—S. A. Greeley. Am. Soc. Mun. Imp., 1926, p. 278 (R).
4. Financing, Rental and Amortization of Private Sewerage System at Troy, Pa.—H. W. Taylor. Am. Soc. Mun. Imp., 1926, p. 290.
5. Financing the Baltimore Sewerage System.—M. J. Ruark and C. E. Keefer. Eng. News-Rec., May 5, 1927, p. 724.
6. Sewer Service at Manila Charged for on Metered Water Consumption Basis.—Eng. News-Rec., September 8, 1927, p. 404 (R).
7. First Annual Report of Ohio Conference on Sewage Treatment, October 26, 1927 (L), (Dayton ordinance and others in Ohio).
8. Financing Sewage Treatment by Ohio Sewer Rental Law.—Water Works, April, 1928, p. 173.
9. Financing Sewer Maintenance.—L. B. Reynolds, Jour. Calif. Sewage Works Assoc., 1928 (R) (L).
10. 14th Annual Meeting, N. J. Sewage Works Assoc., March 22-23, 1929 (L).
11. Campaign to Make Sewers a Utility Continued at Grand Rapids.—Eng. News-Rec., March 7, 1929, p. 391 (R).
12. Making Sewage Disposal Pay Its Way.—G. J. Wagner. Am. City, May, 1929, p. 157 (R).
13. Distribution of Costs of Sewerage Systems.—W. S. Tanner. Abstracted in Proc. A.S. C.E., August, 1929, p. 1423; also Eng. News-Rec., May 2, 1929, p. 715 (R).
14. Financing the Operation and Maintenance of Sewage Treatment Plants.—Ernest Boyce. Munic. News, July, 1929, p. 305 (L).
15. Sewage Treatment in Wisconsin.—L. F. Warrick. Sewage Works Journal, July, 1929, p. 481 (L).
16. Sewer Charges Authorized in New York State.—Eng. News-Rec., July 4, 1929, p. 10 (L).

ACKNOWLEDGMENT.—From a paper read before the American Society for Municipal Improvements.

Effective Restriction of Outdoor Advertising Urged by American Institute of Architects

To the Editor of THE AMERICAN CITY:

We have read with interest comment on the subject of outdoor advertising appearing in your January number. In this connection your readers may be interested in the following extract from the minutes of the November, 1929, Board meeting of the American Institute of Architects:

"The Secretary called attention to the multiplication of sign boards, billboards, and related structures and devices now in evidence on the roads, highways, and boulevards of the United States, and to the resulting destruction of the natural beauty of the face of the earth, with its secondary but equally disastrous effect upon the sensibilities of the people of the United States. The following resolution was adopted:

"*Whereas*, the American Institute of Architects, the national organization of the architectural profession in the United States, is conscious of the steadily increasing number of signboards, billboards, and other devices erected for advertising purposes along the roads, higways, and boulevards of the country, and,

"*Whereas*, this selfish desecration of the landscape, has aroused the antagonism of those whose journeys by boat, train and automobile are rendered disagreeable and dangerous by such blatant and obtrusive ugliness, and,

"*Whereas*, the Institute, through its chapters and its individual members resident in all sections of the country, is convinced that this type of advertising is highly objectionable to a great majority of good citizens; now, therefore,

"*Be it resolved*, that the board of Directors of the American Institute of Architects hereby calls to the attention of the civic organizations of the country, the public, the press and the legislative bodies of the several states a national condition which we regard as inexcusable on either esthetic or economic grounds. And, further, the Board earnestly urges that those agencies which are properly concerned with the cultural and spiritual welfare of the American people, as well as those concerned with their material well-being and safety, take vigorous action through the various means at their command, to bring about by regulation, legislation or the force of public opinion, the complete removal of billboards, signboards and related structures from the roads, highways and boulevards of the country, except in such limited areas as may be set aside for such advertising by direct action of the proper authorities."

EDWARD C. KEMPER,
Executive Secretary, American Institute of Architects.
Washington, D. C., January 8, 1930.

What Makes a Good Municipal Engineer?

By DAVID C. BOSWELL

CITY ENGINEER, RIDGEFIELD PARK, N. J.

IN a report to the Mississippi Commissioners, Chief Engineer William Starling said: "A good engineer must be of inflexible integrity, sober, truthful, accurate, resolute, discreet, of cool and sound judgment, must have command of his temper, must have courage to resist and repel attempts at intimidation, a firmness that is proof against solicitation, flattery or improper bias of any kind, must take an interest in his work, must be energetic, quick to decide, prompt to act, must be fair and impartial as a judge on the bench, must have experience in his work and his dealing with men, which implies some maturity of years, must have business habits and knowledge of accounts."

A good engineer maintains a library of the best books and manuals, he is subscriber to all of the best engineering publications, and he is not only a subscriber, but he reads and studies them and makes an index and files the magazines in his reference library.

Duties of Municipal Engineers

The municipal engineer is an engineer licensed by the State Board of Professional Engineers to practice engineering in a particular branch of engineering. His duties comprise the supervision of the purchase and construction of municipal improvements such as streets, sewers, parks and playgrounds, garbage disposal equipment, etc. In addition, he is an executive head of the department furnishing information and statistics relative to engineering matters to the governing body of the municipality, or any member of that body.

The engineer's duties in connection with the procedure to make an improvement are outlined below:

PETITION

Usually, major improvements are petitioned for by the taxpayers, the petition being made out and signed in proper legal form and submitted to the governing body. That body then calls upon the engineer to prepare information for an ordinance describing and appropriating the money to make and pay for the improvement. It is the engineer's duty in this connection to make preliminary surveys, plans, estimates, specifications, etc., and furnish to the attorney such information as may be required for the preparation of the ordinance.

ORDINANCE

The ordinance gives a complete description of the work to be done and appropriates the money to defray the cost of the improvement. Rather than make a detailed description of the work, the engineer's plans and specifications are usually referred to as describing the work more particularly, and it is therefore the engineer's duty to see that the plans and specifications embody the complete details for the improvement and to see that the plans and specifications are on file in the public records of the municipality.

It is the engineer's duty to be present or represented at all hearings in the course of the passage of the ordinance, to satisfy the inquiring parties in regard to any information of an engineering or technical nature, and to advise the administration or governing body in regard to engineering or technical questions which may arise in any discussion relative to the ordinance.

PLANS AND SPECIFICATIONS

It is the engineer's duty to see that the plans and specifications are made in accordance with the best engineering practice by a personal supervision of the preparation of them.

ADVERTISING FOR BIDS

After the ordinance has been passed, the next step is the advertising of the proposed work and the solicitation of bids from contractors. It is the engineer's duty to see that the work is awarded to the lowest responsible bidder.

CONSTRUCTION

The construction of the project is commenced as soon as possible after the signing of the contract and the furnishing of a bond by the successful bidder.

The engineer then proceeds to direct the construction of the work, furnish all details, grade stakes and instructions. It is the engineer's duty to see that only competent inspectors are assigned to the work, and to assume full responsibility for the actions of said inspectors.

The engineer should make periodical inspections of all construction work, check the quality, by test, of all materials used, check quantities and measurements and the proportioning of aggregates for concrete, the time of mixing, method of laying and finishing of all concrete and other work.

It is the engineer's duty to see that the intent of the plans, specifications and contract are carried out to the full and proper protection of the interest of the administration and the taxpayer.

The engineer should measure all completed work, issue such extra work orders, or supplemental agreements, as may be required, and see that the work is done within the contract price and appropriation.

The engineer should issue certificates for completed work, together with progress reports. Copies of all important correspondence should be forwarded to the Mayor and Chairman of the Public works or Improvement Committee so that they may be at all times familiar with the details and progress of the work.

Assessing

It is the engineer's duty to prepare an analysis of the cost of the completed improvement, together with copies of certificates and assessment maps, and any other information which will tend to expedite the work of the Assessment Commission, with the ultimate result that the cost of said improvement is most equitably charged to the properties particularly benefited by said improvement. The work of levying assessments should be done as soon as possible, to keep the interest incurred during construction down to a minimum.

The engineer should attend, or be represented at, all public hearings for the assessment of the costs of improvements and should be prepared to satisfactorily answer all reasonable complaints from property owners protesting the charges for the cost of the work.

Integrity Retains the Taxpayer's Confidence

The engineer's general attitude, personal conduct and satisfactory relation-

Why Write Such an Article?

There are, unfortunately, so many different kinds of engineers, good, bad and indifferent, that it is necessary, for the benefit of laymen, to lay down in measurable terms something with regard to the scope of the duties of a municipal engineer. The question has been raised so many times by councilmen and members of the governing bodies of municipalities that this brief résumé has been prepared outlining some of the most important duties of the engineer in connection with public improvements.

ship with the taxpayers, members of the administration, civic bodies, together with the proper supervision of the work, will have a natural tendency to bring about the most favorable reaction and comments from the general public toward the entire administration in the progress of the construction work and the assessing.

The engineer's proper management and conduct on the work will gain for him the confidence and admiration of the taxpayer and reflect well upon the entire administration.

Adherence to the above rules by a municipal engineer will bring commendation of the most favorable kind, rather than complaints from the taxpayers at the hearings for the levying of the assessments, and will prevent litigation, long-drawn-out court procedures in the appeal of assessments and other unpleasant actions on the part of the taxpayer, which are to be prevented by the proper conduct of the subordinates and the executive which make up a part of the administration.

Hard Texas Water Satisfactorily Softened for Domestic Use

By ROY MASSINGILL
CITY ENGINEER, HICO, TEXAS

SOAP bills were running high in Hico, Texas, a town of 2,000 population, and the taxpayers registered a real kick at the hardness of the water. Ninety-nine per cent of the homes in Hico are served by the municipal water-works. Prior to the installation of a water softener, the city water had the following characteristics:

	Grains per Gallon
Total non-encrusting solids	4.08
Total solids	24.13
Hardness	19.43
Total alkalinity	17.20
Total encrusting solids	20.05
Iron	0.19
Silica	0.81

Those acquainted with water analysis will quickly recognize that this water was not at all satisfactory for domestic consumption. The hardness was high and good laundry work was impossible. The iron in the water made it objectionable on account of the stains it left on bathroom fixtures.

A survey of the existing plant was made by engineers employed by the city. The plant consisted of two wells which were pumped by piston pumps direct to two standpipes and flowed from them to the city mains by gravity.

Cold Process Water Softener Installed

After the study of the supply was completed, it was decided to install a Graver cold process softener consisting of a settling tank of 6.8 hours reaction time, measuring 15 feet, 9 inches in diameter, by 28 feet, 4 inches high, in which the water was treated with lime, soda ash and sodium aluminate.

The proportioning arrangement was worked out by the Graver Corporation engineers, to use a standard disc meter on the discharge line of the piston pump, which discharged directly into the settling tank. To this meter a reduction gear was arranged to which an aluminum drum was attached around which a flexible cable was wound. The other end of the cable was attached to a curved swing pipe in the chemical tank, so that when the water was being pumped to the tank, the meter mechanism would unwind the cable on the drum and cause the swing pipe to immerse in the chemical solution, and an amount of chemical proportional to the flow of water would flow to a piston type pump. The chemical was thus pumped to the downtake located in the center of the settling tank in which the raw water from the well discharged.

An outlet pipe located beneath the water-level in the settling tank permits the softened water to flow by gravity to two pressure filters and thence to a 250,000-gallon covered concrete storage tank.

From the storage tank the water is pumped by two DeLaval centrifugal pumps, one of which is a standby unit, to the elevated tank. The pumps are so arranged that in case of fire they can be turned direct to the mains.

The results obtained by the conversion of the deep-well pumps through reducing the head on the pumps were very satisfactory, inasmuch as the horsepower requirement was materially reduced, as shown in the following table:

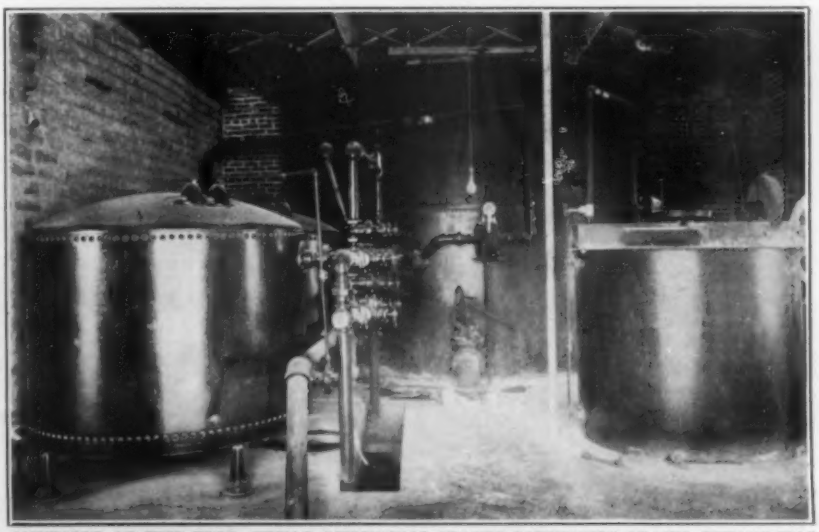
Two pumps for 1928 for July, August, September and October	$468.00
Five pumps for 1929 for July, August, September and October	350.38
Saving	$117.62
Cost of treating the water with chemicals for the four months in 1929 was	$242.00
Saving in power	117.62
Extra cost of soft water	$124.38

By the addition of the storage and pumps the fire insurance rate was reduced from 68 cents per 100 to 36 cents per 100.

The softener has reduced the hardness to about 3 grains average. Phenol alkalinity of about 2 grains, total alkalinity of about 5 grains, using ¼-pound of K.W.S. sodium aluminate per 1,000 gallons of water, 3.05 pounds of lime per 1,000 gallons of water and 1.4 pounds of soda ash.

The water does not stain the bathroom fixtures, and no scale is deposited in the hot water heaters or heating plant, and first class laundry work can be done.

Water pumped July, 1929	680,400 gal.
Water pumped August, 1929	2,014,600 gal.
Water pumped September, 1929	1,778,000 gal.
Water pumped October, 1929	1,547,700 gal.



INTERIOR OF THE HICO, TEXAS, MUNICIPAL WATER-SOFTENING PLANT, WHICH HAS A CAPACITY OF 6,000 GALLONS PER HOUR

The Municipal Building at Bloomfield, N. J.

By CHARLES DEMAREST
MAYOR

ONE OF THE CORRIDORS

THE COUNCIL CHAMBER

FOR many years our town has contemplated a new Municipal Building, but its realization has remained for the present administration.

The building, of Georgian architecture, is so placed as to form the dominant element of the future civic center. It is of skeleton steel construction, with red brick exterior, limestone trimmed. The foyer and corridor walls are of Travenelle marble, the floors of Travertine. The cost was approximately $458,000. There are two stories and a basement, 72 by 132 feet. The first floor has a court room, seating 150. Here, a large allegorical mural depicts Law and Order. There are also Police, Tax, and Water Department offices, and lavatories for men and for women.

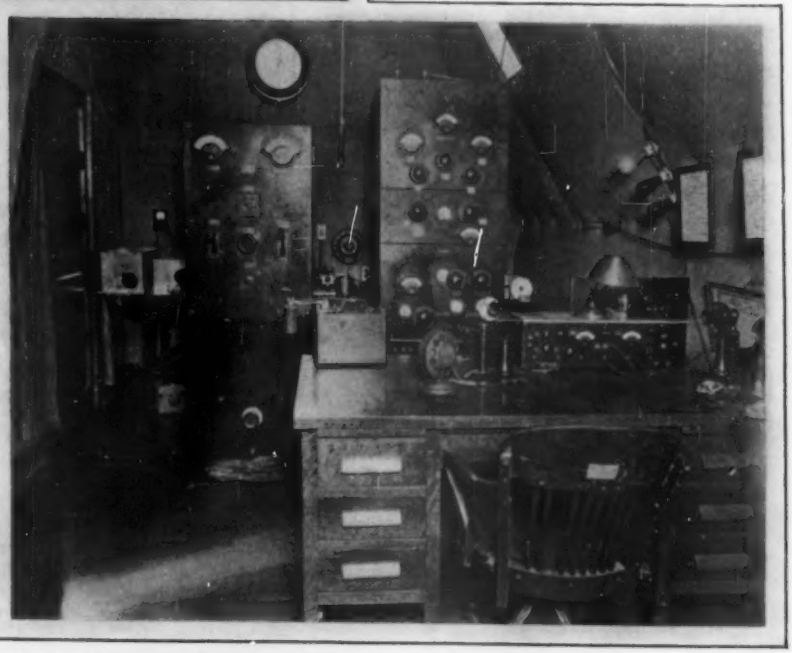
The second floor contains a council chamber, seating 156 persons; a council conference room; clerk's office and anterooms; offices for building inspector, supervisor of transportation, engineer, attorney, bookkeeper, etc. Also the mayor's beautifully finished office, a mayor's conference room, and an extra room for special meetings; and lavatories. The basement contains the jail, police offices, garages, etc., also public lavatories.

W. O. Bartlett, A.I.A., Architect; A. B. Marsh, Associate

Radio Revolutionizes Police Work

By RALPH L. PETERS

NATION-WIDE use of radio as a police weapon in the never ending war with the criminal is being effected at a rapid pace as one police department after another finds in radio a swift and efficient ally.



WCK, POLICE HEADQUARTERS, DETROIT, AND ONE OF THE RADIO-EQUIPPED CARS TO WHICH IT BROADCASTS ORDERS

Police work has achieved a speed never before believed possible. Arrests have become a matter of seconds in the cities where police radio stations and radio-equipped police automobiles weave an invisible network in which to snare the crook. Swift police cars patrolling assigned districts are dispatched on an instant's notice to the scenes of crimes. Their receiving sets and loud speakers enable the police dispatcher and radio operator to communicate with them at any second.

So swift is their descent on law-violators that burglars have been surprised in the act of looting homes; hit-run drivers apprehended; slayers caught before they could leave the scenes of their crimes; bandits captured or killed at or near the scenes of holdups, and racketeers of various sorts arrested within a few seconds after the police had been informed of their activities.

An Immediate, City-wide Alarm

When one police cruiser or scout car is being assigned to investigate some reported crime, the same message is being received by every other radio-equipped police car in the city. A city-wide alarm is achieved immediately.

The police dispatcher may concentrate any number of cars in a given area, throwing an armed cordon about any area in the city in a few seconds. Being in constant touch with the crews, he can flash them the path of escape being taken by a bandit car and enable the blocking of the getaway.

He can notify all the cars simultaneously of the license number of the automobile the fleeing bandits, hit-run driver or kidnappers may be using. He can warn the cruiser crews of the number of men they will be required to face. Likewise, should a report prove unfounded, he can notify the cruisers and have them return at once to their patrol duty.

Small wonder the crook in Detroit, Chicago, Cleveland, Highland Park, Mich., Berkeley, Calif., and other cities where radio has been or is being put into use by the police, has come to fear this newly proved police weapon. He never knows when a police car and crew, dispatched by radio, may roar up to trap him red-handed.

Seconds count with the crook. A narrow margin of seconds means either escape or capture. The police use of radio is paring that margin close. Certainty of prosecution and punishment may be feared by the crook, but swift apprehension is even more feared.

What Detroit Has Done

Just how swiftly the apprehension of criminals can be accomplished is best demonstrated by the Detroit Police Department's outstanding record.

The Detroit police use two types of radio-equipped automobiles. The cruisers are high-powered seven-passenger cars to each of which four men are assigned. They are armed with revolvers, automatics, shotguns and tear-gas bombs. The scout cars are light but fast touring cars with a crew of two men to a car.

The crews of these radio-equipped cars, 35 in all, have made more than 1,300 arrests in the last 19 months at an average time of approximately 90 seconds. During the month of September, 175 arrests were made at an average time of 61 seconds each. Many arrests have been made within 15 to 20 seconds after the dispatcher's voice had sent the police cars roaring off to the scene of some crime. Many others have been accomplished in 30 seconds.

Scarcely a week goes by but that one or more burglars are captured in stores or homes they are looting. Two arrests made by the crew of a McClellan Station scout car are typical.

The McClellan Station cruiser, No. 5, was ordered at 1:19 a.m. to a home where prowlers were reported in the basement. Off sped the cruiser to the address given. The crew of No. 52 scout car of course got the message at the same time. The scout car was less than a block away from the house being burglarized. Fifteen seconds later the prowlers were under arrest by the two patrolmen of the scout car. When the cruiser arrived, 60 seconds after receiving the alarm, there was nothing left to do but take the prowlers to the station house.

Nor is such an occurrence unusual. The dispatcher directs one car to go to the scene of a crime. If another car is within a short running distance of the address given, that car and possibly even a third car will hasten to the spot.

Scout car No. 31 was recently given a report that a man was attempting to force his way into a hardware store. The prowler was under arrest 30 seconds later.

Scout Cars and Cruisers Cooperate

No. 10 cruiser was told there was a burglar in an apartment. The cruiser was at the far end of its territory at the time and did not reach the apartment until three minutes after receiving the order. Meanwhile, a scout car from the same precinct had reached the scene and the burglar had been arrested.

Thieves who made a practice of stripping parked cars of tires and accessories soon learned of the swiftness of the radio-dispatched car. More than a dozen such thieves have been apprehended.

No. 9 cruiser was given a report that two thieves were stripping a car. The cruiser crew arrived at the spot in two minutes, but found one of the precinct's scout cars had arrived in 90 seconds and the thieves had been caught.

No. 5 cruiser was ordered to a supply company office that had been held up. The bandit was sighted running from the office and was ordered to halt. He did not comply and was shot and killed.

No. 7 cruiser was flashed a warning that an armed man had been seen entering a grocery store. The cruiser sped off to the scene, and the thug was arrested as he ran to a waiting taxicab after holding up the store.

A Justified Faith in Police Radio

These examples, all taken from the log of WCK, the radio station of the Detroit police, attest the efficiency of radio as a police weapon. The success attained by the Detroit police, pioneers in the successful broadcasting of orders to radio-equipped police cars, has been responsible for the present rapid spread of radio's use by the police.

That success was not achieved without months of delay, experimentation and ironing out of "the bugs," as radio men term technical difficulties. Had it not been for the unflagging faith of Commissioner William P. Rutledge, of the Detroit police, in the possibilities of radio, it might not have been achieved for months to come.

A few years ago, police officials all over the country were talking of using radio. One by one, for some reason or another, their interest waned and in many instances became extinct. Commissioner Rutledge persisted and with the formation of an efficient radio staff the task was accomplished.

The attention of police officials and civic officials the country over was turned on Detroit. Representatives were sent to Detroit for a first-hand inspection of the system. They were convinced. Commissioner Rutledge delivered an address on police radio at the convention of the International Association of Chiefs of Police at Atlanta, that spurred the interest even more.

The Network Grows

Chicago fell into line. Lieut. Kenneth R. Cox, under whose direction the Detroit system became a success, was given a leave of absence to assist in the establishing of a radio system there. Within the next few weeks the job was done. Chicago now has more than 200 radio-equipped cars patrolling the streets.

Cleveland established a system. A public subscription campaign enabled Indianapolis to go ahead with a radio system for the police there. Patrolman Robert Batts, of the Detroit police, was sent there on a leave of absence to assist in establishing the system.

The Federal Radio Commission has granted or is considering station licenses for Berkeley, Calif., Buffalo, Cincinnati, Beaumont, Texas, Miami, Pasadena, Philadelphia, Tulare, Calif., Highland Park, Mich., and other points, in addition to those named. New York, Portland, Ore., Atlanta, Youngstown, Ohio, and other cities are considering following the example set.

Where will it end? Commissioner Rutledge and other police officers say not until the entire country is linked together in a system of police radio stations and radio-equipped cars that will make crime more difficult than ever.

The Folly of Meager Minimum Recreation Standards

IT would appear that the greatest recreation need in the cities of the United States today is for neighborhood recreation grounds provided in proportion to population density and so located in residential areas that children and adults may be able to make daily use of these facilities as they can in the almost ideal park and recreation system of Minneapolis. Much discussion has been going forward in the last two years as to certain "standards" which may be evolved as to the spacing of these neighborhood grounds and as to the exact amount of play area which should be provided for various types of residential development and the consequent densities of population. Studies made by the Regional Plan of New York for Manhattan and other parts of the New York Region present a discouraging picture of the feasibility of really meeting recreation needs in congested districts. The Regional Plan concludes that where the density has already risen above 50 persons or 12 houses on an average acre, adequate provision of open space is impossible.

Similar studies made by the Playground and Recreation Association of America point to the impossibility of setting up in dense populations any practical standards for play space which even approach a desirable provision for the outdoor recreation needs of a balanced human existence. The conclusion to which Mr. Weir of that Association has been driven is that we cannot expect ever to provide adequately for this vital requirement of life unless the residential population is spread out in open development residential districts, normally expressed by single-family homes built no more densely than six to the acre. It is encouraging to have standards from two sources based on a social conception rather than on a purely statistical average arrived at from existing conditions. Just because a few of the metropolitan cities are unable to provide a considerable portion of their populations with either homes or play spaces favorable to complete living—except, perhaps in sporadic, successful experiments such as "Sunnyside"—is no reason why meager minimum standards should be set up as a guide for the hundreds of growing communities in all parts of the country where there is still opportunity, especially in undeveloped areas, to encourage and apply standards commensurate with needs.

KIMBALL and HUBBARD, in
"Our Cities Today and Tomorrow,"
Harvard University Press, 1929.

Cut-out Repairs and Resurfacing for Philadelphia Streets

By MARTIN J. McLAUGHLIN
DEPUTY CHIEF OF HIGHWAYS, PHILADELPHIA, PA.

THE city of Philadelphia has two municipal asphalt plants: one centrally located, which has two 48-inch diameter internally fired dryers; and another located in the southwestern part of the city, which has a 66-inch diameter internally fired dryer. Each plant averages a daily output of 350 tons from April until December, and approximately 250 tons daily from December until the end of March.

Two Kinds of Maintenance Work

The asphalt maintenance work is divided into two classes—cut-out repairs, and resurfacing by the heater method. There are 15 repair gangs working on the streets. To each repair gang an air-compressor unit is assigned which performs all the cutting-out necessary in connection with the repair work. One 5-ton roller accompanies each cut-out repair gang; while both a 5-ton and an 8-ton roller are assigned to each surface heating gang.

Equipment such as small asphalt tools, heater wagon, etc., is practically the same for both cut-out and surface heater gangs, with the exception that an extra roller, long-handled rakes and a heater are used on the latter type of maintenance.

Hauling

City trucks are used exclusively to haul the dirt from these gangs. Hauling of asphalt mixtures from the plants is done by contract. In connection with the hauling of mixtures by contract this year, the changing of the item from hauling by the day to hauling by the ton, saved the city $60,000.

Where boxes are to be raised or the base disturbed in any manner whatsoever, the restoration of the concrete is made with rapid-hardening cement.

Heater Method of Repair

The resurfacing of badly worn asphalt and brick streets by the heater method has proved in the city of Philadelphia to be the most economical as well as the quickest way in which to give the motor-riding public new streets for old ones.

In the resurfacing of asphalt streets the heater is employed to soften the surface of the old pavement, after which approximately ¾-inch of the sheet is removed by rakes or hoes. Following this, binder is used to give the street its

TWO NOTABLE RESURFACING JOBS IN PHILADELPHIA, BOTH DONE BY THE HEATER METHOD
1 and 2. Before and after resurfacing an old brick pavement on Gaul Street between Ann and Indiana Streets. 3 and 4. A similar job on Wishart Street between Kensington Avenue and Jasper Street

TWO HEATERS WORKING AND ONE ASPHALT SPRAY MACHINE ON BRICK RESURFACING JOB IN PHILADELPHIA

proper contour, if necessary. The new sheet is then laid in the usual manner, to the average depth of 1 inch after final compression.

The type of heater to be used is of great importance, as care must be exercised to use a machine that softens the old asphalt pavement by means of a blast of hot air, never allowing the flame to come directly in contact with the old surface.

Resurfacing Brick-paved Streets

Where adjustments are to be made at intersecting streets or to utility boxes, necessitating the disturbance of a brick pavement, the bricks after being relaid are compacted by the use of a 5-ton roller and then grouted-in with a rapid-hardening cement at least 24 hours prior to the resurfacing of the street. After the street has been thoroughly broomed, a thin film of high-penetration hot asphaltic cement is sprayed on the brick surface through a nozzle to which air pressure is supplied. Binder or surface material is then tamped into the depressions, and the street is ready to receive a sheet asphalt surface, which is laid in the usual manner, to the average depth of 1¼ inches after final compression.

In order to have proper curb height on a street which is to be resurfaced, it is often necessary to lower the paving of the old street adjacent to the curb on brick streets, and to cut out straight along the curb if it is an asphalt street, prior to the resurfacing.

While this method is not set up as a sure cure for all old streets, nor takes the place of repaving when necessary, it is felt that through the treatment of old and badly worn streets by this method, Philadelphia is rapidly catching up in its maintenance work, which, during the war, was allowed to reach such a state that it seemed an insurmountable task to restore the streets to their present first-class condition.

Costs

In 1928, from April to October, the total resurfacing work completed by this method under contract and by city forces, amounted to 945,128 square yards, at a cost of $1,214,473.66, or an average cost of $1.27 per square yard.

For 1929 the total amount of work to be done by this method, under contract and by city maintenance forces, will be 1,150,000 yards, at a cost of $1,220,000, or an average cost of $1.06.

Estimating the Damage Done by Widening a Road Lined With Trees

To the Editor of THE AMERICAN CITY:

The writer was asked recently to evaluate the damage about to be done by widening, entirely for the benefit of through traffic, a road in one of the finest residential suburbs of a city.

The old road was 50 feet wide between property lines, with a cartway of penetration macadam, 18 feet in width. On one side of an adjacent section in which my clients were interested was a fine old estate with very extensive plantings, and trees rich in historical value. On the other side of the road was another portion of the same estate, formerly used as a prize stock farm but now undergoing operations for an exclusive large lot development.

This side was practically clear for a few hundred feet back of the roadway, with the exception of a row of large trees lining the road. The development, comprising more than 150 acres, was oblong in shape, with the shorter side fronting upon the road and the longer side extending back about half a mile. Entrance to the development was over a newly opened road leading from the main roadway. Naturally, an attractive outlook along the main highway was desirable to entice prospective buyers into the interior of the development, which offered an impressive view across the valley of a stream into hills which were heavily wooded.

To widen the road meant cutting down the row of handsome trees. The developers were anxious to ascertain what would be the damage suffered to their property by widening the road at the sacrifice of these trees. To evaluate other damages anticipated was comparatively simple, as it involved merely figuring the acreage of the ground to be taken over by the state authorities at the market prices, and the cost of several minor buildings which would be razed. To evaluate the trees, was much more difficult, especially since some of them were 30 inches in caliper and of perfect formation, and had historical legends connected with them.

The legal contention was that the value of the land was not affected by the trees on the property. While this assertion is undoubtedly true in many instances, I do not think that it applied to this one. It is my opinion that the value of the land is so much, and the arbitrary value of the trees just so much more. Thus, if an acre of land is worth $10,000 and contains three trees worth $1,000 each, the lot will sell for $13,000. Even this system of evaluation, I felt, would not entirely compensate these owners, because the interior of the lots, while not directly affected by the elimination of the trees, would be so indirectly, on account of the unattractive entrance thus created. I therefore estimated the damages anticipated upon the following considerations:

1. Damage to the amount of land absorbed, based upon the land being bare.
2. Damage to the amount of replacement of trees destroyed, estimated at so much per caliper inch.
3. Damage, arbitrarily determined, due to the impossibility of replacing some of the trees because of their size and legend.
4. Damage to the amount of depreciation to the interior lots due to the unimpressive entrance.
5. Damage to the amount of buildings, walls, etc., razed.

Do the surveyors, engineers, and real estate men reading this letter agree with my diagnosis of this problem?

JOHN WENDOLIN KING,
Registered Surveyor, Philadelphia, Pa.

FORWARD STEPS

Reported by

Municipal Officials, Chamber of Commerce Executives, and Others

Mosquito Marsh Transformed into Handsome Park Setting for Imposing Buildings

HARRISBURG, PA.—Italian Park, in this city, originally consisted of a shallow small lake, bordered by marshy ground and edged on three sides by scrub trees. The park, if it can be dignified by that name, was located in the heart of a rapidly growing residential section. In the immediate vicinity Harrisburg recently erected a large, modern senior high school building at a cost of approximately $1,000,000. Nearby also is a new public hospital (Polyclinic Hospital) and a private academy (Harrisburg Academy). In the course of construction is a $1,000,000 temple of the Mystic Shrine. In other words, the park is really in the middle of a civic center, which is completely surrounded by residences of the better class.

A breeding-place for mosquitoes and used only for a short time in the winter by youngsters skating on the small pond, the park was unsightly and far from desirable. The suggestion had been made that it be filled with dirt and the water from the pond diverted into a sewer.

A group of members of the Harrisburg Chamber of Commerce in the district in which the park was located realized the value of its preservation, if it could be improved. They aroused interest in the project in their own section of the city and then sought endorsement of their idea by members of the Chamber in other districts. With the entire membership of the Chamber in favor of the park's improvement, the matter was taken to the Chamber's Board of Directors, who thought well of the suggestion and named a committee to carry the project to a successful completion.

City Council was importuned to carry out the project and authorized the Superintendent of Parks and the City Engineer to work out the detailed plans and estimate the cost. The most important item in the improvement was soil for fill, and it happened that nearby the School District was grading the campus of the new high school. With the aid of the Chamber's committee, an economical agreement was made between City Council and the School District to obtain the necessary soid by removing it from the school campus and dumping it in the nearby park. Thus the School District was saved the cost of a long haul to get rid of the dirt and the city was saved the large cost of buying fill from a distant point.

The City Department of Parks landscaped the area, planted flowers and maintains a beauty-spot where a murky old pool was formerly. The result is that the public buildings in that section of the city have beautiful surroundings and real estate values have been enhanced

R. W. CRIST,
Asst-Sec., Chamber of Commerce.

New Rescue Squad Car of Unusual Design

WASHINGTON, D. C.—A rescue squad car of an unusual design has just been built for this city. This car was designed by O. E. Fearn, Superintendent of Machinery of the District of Columbia Fire Department.

Heretofore, rescue squad cars of various kinds have been made by different cities or manufactured for them to meet certain local conditions, but most of these cars have followed in a general way the conventional body design of hose cars into which have been built the required compartments.

Following along this line, the District of Columbia Fire Department built in its repair shop in 1924 a rescue squad car and searchlight wagon for use in the downtown district and later built another such wagon for use in an outlying section.

After these cars had been placed in service, it was learned that neither of them was designed to give adequate space and the proper arrangement of equipment so as to enable the units to function without delays.

Upon the basis of this experience, an entirely new body design was worked out in which each article carried by these units had a definite predetermined location, and in which each article was im-

Courtesy of Harrisburg Chamber of Commerce

ITALIAN PARK, HARRISBURG, PA.

mediately available without disturbing other equipment.

The new design consists of a body which occupies all available space behind the driver's seat, including the space usually taken up by the side running-boards and rear fenders. The body extends over the rear wheels, with fender wells built into the body to obtain the necessary road clearance.

Along the outside of the body on each side are six compartments with hinged doors. One compartment on the right side is designed especially for a first aid kit. It has two shelves for carrying bandages, splints, bottles, etc., and built into the door there is a hinged table that can be let down into a horizontal position, thus providing a table for use in rolling bandages. Both the table and the inside of this compartment are finished in white enamel. The remaining compartments on each side are used for carrying extinguishers, jacks, ropes, grappling hooks, floodlights, and miscellaneous small tools.

On the rear step, on each side of a center aisle, there are two compartments 52 inches high. One of these houses an oxygen acetylene cutting outfit; the other carries in individual holders, axes, claw tools, door openers, etc.

The center aisle is sufficiently wide to carry an extended stretcher. On each side of this aisle there are compartments with hinged covers in which are suspended oxygen breathing apparatus and Burrell gas masks. Below the aisle, there are two long compartments, one of which contains a folded stretcher, and the other long bars, crowbars, gas keys, etc.

Beneath the driver's seat an inhalator is located. This may be removed through doors on either side.

Another feature of the car is a 3½-kw., 110-volt d.c. electric generator, mounted under the driver's seat and driven through a special power take-off from the transmission with a gear shift and clutch control on the right side. On the right side, a control panel equipped with voltmeter, ammeter, rheostat, automatic circuit breaker and switches and fuses for eight circuits, is located.

One of the circuits terminates in a reel, fitted with collector rings and equipped with a detachable hand crank for rewinding, which is located in an enclosure at the rear of the body, below the aisle. This reel carries 600 feet of cable and may be used for portable floodlights. Two other circuits, also controlled from the main switchboard, terminate in two searchlights, one mounted at the front end of the body on each side. The five remaining circuits terminate in waterproof outlets with switches under the control board on the right side of the frame. These outlets are for use in plugging-in for electric drills, saws, portable searchlights, floodlights, etc.

The two searchlights mounted at the front end of the body are adjustable for height, can be revolved in complete circles, and have vertical ranges of 75 degrees.

The rescue squad body is constructed of steel and is practically waterproof.

Other equipment mounted above the body is one 16-foot inside extension ladder, two 10-foot folding pompier ladders, a 10-foot pike pole and a 10-foot folding ladder.

This apparatus was built by the American LaFrance & Foamite Industries, Inc., of Elmira, N. Y., upon an American LaFrance Type "75" chassis.

GEORGE S. WATSON,
Chief Engineer, Fire Department.

A RESCUE SQUAD CAR DESIGNED TO MEET MANY EMERGENCIES

New System of Numbering and Street Marking Adopted in Evansville

EVANSVILLE, IND.—Residents of this city are rejoicing over their latest acquisition—a complete set of new street name signs marking a modern, systematic house-numbering plan. Most citizens have been looking forward so eagerly to the straightening-out of the nearly hopeless confusion in the old numbering arrangement and duplications in street names that they are taking hold with enthusiasm and revising ledgers and addressograph plates without a word of complaint as to expense.

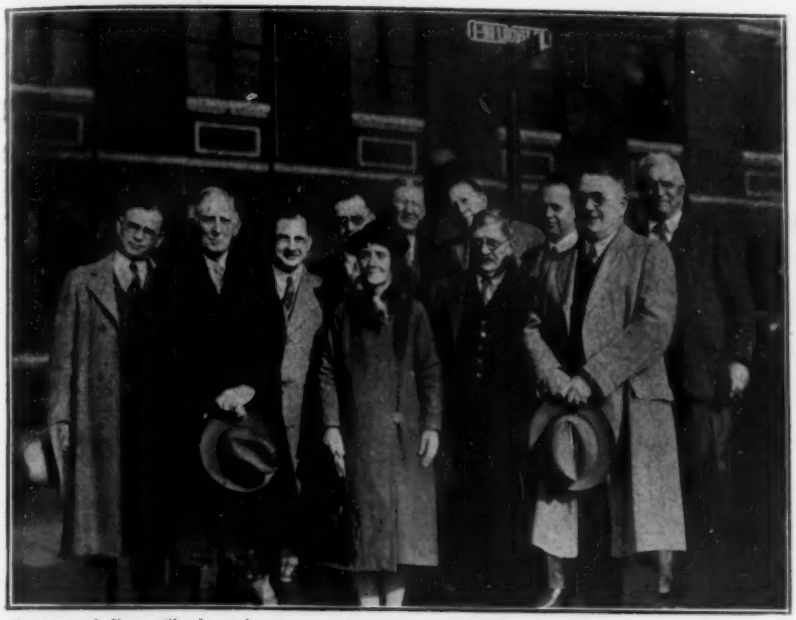
Under the former numbering plan there were nine different streets serving as base lines for the commencement of numbering. Under the new numbering system there are just three. The third one is needed because of the oblique direction of streets of the original settlement. For all streets of the same direction, whether long or short, numbering now starts on the same base line. The numbering at any given point on any street is thus the same as at corresponding points on all other parallel streets.

The City Plan Commission undertook a solution of this confusing condition after the Evansville Real Estate Board had sponsored a movement some years ago to systematize the numbering. In 1925 the Commission's numbering plan and recommendations for changes in street names were published. After wide publicity, public hearings, much further study and some revisions, the renumbering plan and about ninety changes in street names were adopted by the City Council in two ordinances in October, 1928.

Street name signs were needed as much as a revision in the numbering and street naming. Purchase of new signs was therefore sponsored by the Commission as an essential feature of the project. Not only does Evansville now have her street names where they can be read, but her new numbering system appears on the signs. Numbering follows the plan of 100 to the block, and the hundredth number appears with the street name at the beginning of each block.

Brass signs with black background and sunken aluminum letters and with strong galvanized iron frames, were selected by the Board of Public Works after competitive bids and a study of samples. This type of sign had the recommendation also of the City Plan Commission. Durability, legibility, appearance and cost were the points considered by the Commission in

WING TYPE OF STREET SIGN RECENTLY INSTALLED IN EVANSVILLE



Courtesy of Evansville Journal

MEMBERS OF THE CITY PLAN COMMISSION AND BOARD OF PUBLIC WORKS, EVANSVILLE, IND., AND THE FIRST OF THE NEW SIGNS TO BE ERECTED

choosing this kind of sign among the numerous kinds on the market today.

Most of the signs are placed on special tubular iron posts, 3 inches in diameter, and 9 feet high, and are set 3 feet below ground in concrete. The post is normally at the corner of the intersection farthest from the base lines for numbering, thereby marking the beginning of the next block for each street. On streets where ornamental street light posts exist, these are used to support the street signs in the form of wing signs. Iron trolley poles are likewise used for wing signs on certain corners where such poles are in the logical positions for best vision of the signs; 170 of the 1,550 new signs are of the wing type. Virtually all are four-way signs, that is, they can be read from opposite directions on both streets at the intersection. The few exceptions are six-way signs, where three streets are marked at the same point.

The City Plan Commission assisted the Board of Public Works in the project by working out the detailed renumbering as well as the numbering scheme and street name changes. They studied different types of house numbers and issued a recomendation to the public for visible and durable numbers, urging selection of those having the following qualifications: color, black background, and light, reflecting figures, such as aluminum; material, brass, aluminum, or other durable non-rusting material; size of figures, at least 2½ inches high.

They handled the change of address notices (over 20,000 in all) and in addition published a revised address list in pamphlet form. The latter comprised the street guide portion of the 1929 city directory. Over 1,500 copies of the revised address booklets were furnished free of charge to local merchants and business offices and to out-of-town publishers for immediate revision of mailing lists.

The street signs (made by the Union Iron Products Co., East Chicago, Ind.), have cost about $18,000. Clerical work, printing, drafting and field work have added about $3,000 to the city's expense. It has cost many more thousands of dollars for revision of mailing lists, ledgers, etc., by public utility companies, business houses and other organizations. But far greater than all these was the former cost of confusion, delay, mistakes in deliveries and wasted time hunting in wrong directions. Now you can find your way in Evansville.

R. W. BLANCHARD,
Executive Secretary, Evansville City Plan Commission.

A Small City's Big Park Program

ORANGEBURG, S. C.—Of the total investment in parks in Orangeburg, S. C., placed at $110,869, the most important development during 1929 was the completion of the Memorial Plaza at a cost of $77,000. The site occupies an area somewhat smaller than a city block, in the heart of the business section, and was purchased for $62,000. The area is thickly carpeted with grass and bordered with shrubbery. The cannon at each corner of the plot and at one end of the fountain are relics of the Revolutionary, Civil and World Wars. The center of the plot is occupied by a triple-basined pool from which rises an artistic fountain, brilliantly illuminated by submerged lights at night. The shrubbery, landscaping and development of this park area cost $15,000.

During the year three other park areas were added to the city's park system. Moss Heights Park, a triangular half-acre in the northwest section of the city, was landscaped and developed to some extent before being given to the city. It is valued at $1,000. A quarter-acre in the same vicinity, yet undeveloped, was donated to the city and is valued at $500. Another undeveloped area in the northern portion of the city, containing 7/18 of an acre was given to the city during the year. Its value is $2,154.

A recreation area comprising 6.46 acres constitutes the municipal bathing beach. It has been developed to some degree and will be added to from time to time. This is along the banks of the Edisto River, which forms the western boundary of the city. The land cost $3,250. A pavilion has been erected at the site at a cost of $4,465.

The city's first step in the direction of a park system came in 1915, with the purchase of 24 acres of land along the banks of the Edisto. Through drainage and development this has been transformed into a botanical garden, using the natural trees of the area, landscaping, and planting borders of azaleas and other flowering shrubs. One section is given over to a rose garden, and a considerable section has been developed as a playground. This 24-acre tract is valued at $22,500.

Directly adjoining this tract is the city's power-station, the grounds of which have been beautified to a degree beyond that ordinarily seen at such places. Further north and adjoining this land is the bathing beach.

In addition to these park areas, this city of 12,000 to 15,000 maintains under the Playground Commission five playgrounds in various sections of the city.

The park system is directly under the control of the City Council. The Park Commission, recently created and composed of three members, acts in an advisory capacity with the Council.

CHARLES CLIFFORD BERRY.

LANDSCAPING AT ORANGEBURG MUNICIPAL POWER-PLANT

Why Was Cleveland's City Manager Dismissed?

Summary Political Ouster of Administrative Chief in Ohio Metropolis Arouses Widespread Interest

By JOSEPH McGOLDRICK

SIX years ago the manager plan, with proportional representation, was inaugurated in Cleveland with William R. Hopkins as Manager. On January 13 the Council summarily dismissed Mr. Hopkins without so much as a hearing. The P. R.-manager charter has always faced a good deal of opposition in Cleveland. On four different occasions attempts have been made to shelve it for some substitute scheme, but each time enough votes for the charter have been rallied to sustain it. The local Republican organization—Cleveland usually being a Republican city—supported the charter and Manager Hopkins in the first two attacks, but in last year's offensive it observed an ominous neutrality. In 1925 and again in 1927 the organization warmly indorsed Manager Hopkins and his administration in its appeal to the electorate. In the latter year reference was made to ten specific pledges made in the 1925 party platform, and evidence was offered to show that each of these had been explicitly fulfilled. As No. 1 among their achievements they listed William R. Hopkins.

The 1929 party statements made no mention of Mr. Hopkins. His name was quite ignored in all Republican appeals to the electorate. Many of the candidates offered were of an unsually high type, and general satisfaction was expressed, after election, with the Council chosen. On Saturday evening, January 11, the Republican members met in an all-night caucus and at length agreed on the Hopkins dismissal. It is understood that the independent members refused to accept this decision until an agreement could be had upon a successor. This successor will be former State Senator Daniel E. Morgan, a well-known Cleveland lawyer and former head of the Cleveland Citizens League. At the following Monday's Council meeting, after the ouster was voted by a vote of 14 to 11, it was suggested by Manager Hopkins' champions that a bill of charges should be offered. A committee headed by a Democrat, Dr. Walz, was appointed to draw this *post mortem* indictment.

Trivial and Insubstantial Charges

These columns are hardly the appropriate place for an appraisal of the merits of either side of this controversy. The charges presented by the Walz committee do, however, seem trivial and insubstantial. Manager Hopkins was permitted to reply to these charges before a meeting of the Council. His hour-and-a-half address was broadcast by radio. In it he reviewed carefully the six years of his administration of the city government. His undoing he attributed to his refusal to approve a renewal of the East Ohio Gas Company's franchise at an increased rate. He was warned, he says, at the time, that he would have nothing but trouble if he did not accept the proposed franchise and that this threat has been amply fulfilled. To this source of difficulty he adds the general restlessness of the local party organization over loss of patronage and its particular dissatisfaction with the zeal displayed by the Cleveland police.

Spirit of Charter Violated

The Citizens' League of Cleveland has characterized the action of the Council as "a disgraceful proceeding," "as diabolical and un-American a course of procedure as has been witnessed in legislative halls in a quarter of a century." In particular, it believes that Manager Hopkins was not accorded the simple justice which the charter contemplates. In a bulletin published within a few days of the Manager's dismissal, it said:

"The city charter rightly places the power of removal of the city manager in the hands of the Council and makes its action final. But in order to give some assurance that the power will be exercised on the basis of reason and only after due deliberation, the charter provides that the manager may demand the reasons for his proposed removal in the form of written charges, and be given a chance to defend himself. . . . There is universal acceptance of the fundamental right of every man to his day in court."

The "charges" declared Mr. Hopkins "grossly negligent" in approving the purchase of a playground site at an excessive price—a purchase, by the way, for which others have held the Council itself responsible, and as a result of which one of its members is now serving a five-year term in the Ohio penitentiary. He skimped the municipal light plant. He showed "an inherent and continuing incapacity for harmonious and effective cooperation with the Council," encroaching on its legislative functions. He insulted some foreign-born citizens by saying that his ancestors were Republicans while those of his critics were "roaming the plains of Hungary."

As the "Plain Dealer" Sees It

Of these charges the *Cleveland Plain Dealer* said:

"We pay the authors of these charges, whoever they are, the compliment of saying that they probably made the strongest case possible out of material whose flimsiness is apparent to every one even half familiar with events at City Hall."

On one point alone do the champions of Mr. Hopkins express some doubt. The *Plain Dealer* suggests that he may have strayed over too far on the Council's lot. It will be recalled that the Citizens League more than once warned him to cleave to administration and leave matters of public policy to the Council. A year ago it made the prophetic remark that the "advocacy of debatable policies by the Manager weakened his permanency of tenure by making him the target of attack by all the forces opposed to the particular policies advocated."

There is reassurance in the straightforward declaration of Manager Morgan:

"I am well aware that many fear that the actions of the Council in the last two weeks, culminating tonight in the choice of a new city manager, mean that the council manager form of government in Cleveland is to be abandoned or destroyed. At the beginning I wish to remove doubts and to make clear that it is my purpose to cooperate with the Council in giving the present form of government, so long as I am city manager, a fair trial."

The Manager Plan Not Imperiled

The dramatic situation in Cleveland, described in the accompanying article, should not be taken as constituting a danger to the city manager plan. The effect is likely to be quite the opposite. In Cleveland, even more than outside, the result may well be a strengthening, both in the public mind and in practical operation, of this scheme for effective democratic government, now in force in 431 American municipalities—19 cities having been added in 1929, which was more than in the year before. Civic attention in Cleveland—and in the whole country—has been centered on the manager plan more intensely than for many years; and Mr. Hopkins in replying to his adversaries pointed out: "You have not destroyed this form of government. You have only aroused its old friends and made new friends for it."

From another angle the Cleveland situation may be looked upon as a necessary readjustment that should result in a better functioning of the plan, more along the usual and intended lines. The "National Municipal Review" comments: "The fate which has overtaken Mr. Hopkins was as certain as death and taxes. Mr. Hopkins is a man of high attainments and forceful personality, whose honest promoter's instincts led him outside the restricted field of operation and administration into the uncertain terrain of politics. He looked upon his office as that of a glorified mayor rather than as limited to the less dramatic duties of administration."

Reconstruction of Congested Areas of Manhattan's Lower East Side Begins

By GEORGE GOVE

SECRETARY, STATE BOARD OF HOUSING, NEW YORK

THE first step toward reconstruction of the congested areas of the lower East Side of Manhattan under the auspices of the New York State Board of Housing has been announced with the publication of the architects' plans for the model six-story, elevator dwellings soon to be erected on the site formerly occupied by the Hoe printing press factory, which covered the blocks bounded by Grand, Columbia, Sheriff and Broome Streets. Demolition of the factory buildings is just being completed, and construction of the model residential buildings will begin in February.

THE $1,500,000 MODEL DWELLING UNIT AEOUT TO BE BEGUN

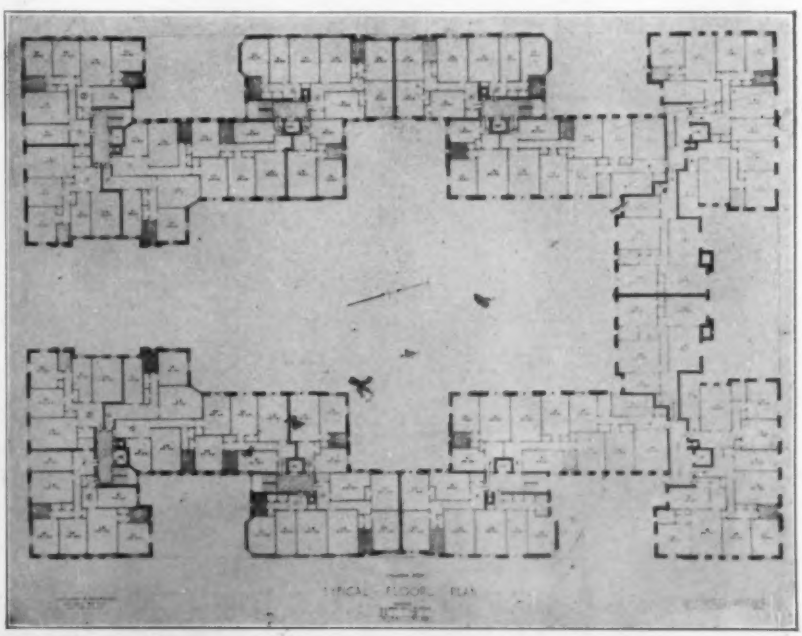
This site was acquired a few months ago by Aaron Rabinowitz, a member of the State Board of Housing, and by Lieut. Governor Herbert H. Lehman. The total cost of the project will be $1,500,000, of which $320,000 represents the cost of the land. Approximately two-thirds of the total cost will be advanced on first mortgage by the Bowery Savings Bank under the terms of the State Housing Law, which provides that the annual interest shall be limited to 5 per cent. The mortgage will run for a term of twenty years with a low rate of amortization.

Actual construction will be undertaken by a limited dividend corporation created under the terms of the State Housing Law to operate the buildings at cost, with a maximum return limited to 6 per cent per annum on the capital invested. This corporation, to be known as Amalgamated Dwellings, Inc., has been created by the Amalgamated Clothing Workers Union of America, to which the site has been transferred by the present owners at cost.

On the completion of this project, the Union will have sponsored new housing under the State Housing Law representing a total investment of $4,600,000, providing accommodations for more than a thousand families. This building, like the other Amalgamated houses, will be operated on the cooperative plan, with an initial payment by the tenant owners of from $150 to $250 per room and monthly rentals averaging $12 per room. Some of the apartments will be available at even lower rentals. Both the construction and the management of the building will be supervised by Abraham E. Kazan, to whose efforts much of the success of the Amalgamated Housing program is due.

The plans, recently announced by the architects, Springsteen and Goldhammer, provide for buildings in the form of a continuous structure with indented courts and a uniform cross-section two rooms deep, insuring ample light and through cross ventilation for every apartment. The buildings will occupy only 51 per cent of the plot, and every room in the square block of buildings will have windows on the street or court. Living-rooms and many of the dining-rooms will average 12 x 18 feet in size with a gross average floor area per room of 264 square feet. The buildings will surround a great central court 73 feet wide by 170 feet in length. This court surpasses in proportion the amount of space allotted for such purposes even in the most exclusive residential areas of Manhattan. It will be landscaped and will provide ample playground facilities. Because of the economies available under the State Housing Law, it has been possible to provide automatic electric elevators, incinerators and electric refrigeration, as well as steam heat; also a small auditorium, a library and a day nursery. The apartments will range from three to five rooms in size.

Bernard Raymond, the builder, anticipates construction will be completed by the early fall.



Springsteen and Goldhammer, Architects

A TYPICAL FLOOR PLAN OF THE PROPOSED DWELLING UNIT

The Grade Crossing Takes Heart-Breaking Toll

Nine Children and Driver Killed When School Bus Is Struck by Fast Mail

THE year got off to a bad start in Ohio with one of the worst grade-crossing accidents of recent years. A school bus, hurrying on its usual morning errand across the tracks of the New York Central Railroad, paused to let one train pass by, only to be run down by a fast mail express rushing along on the outside track. All but one of the ten little children and the driver were killed. The sole survivor, eight-year-old Mary Davidson, is promised recovery. Two of her brothers were killed in the wreck, which occurred a short distance from their home, where their mother and baby brother stood waving to them from the porch.

It is suggested that the driver's view was obscured by frost on the windows of his bus. The crossing is open enough, as the accompanying pictures show. It is also apparent that it is none too well protected. The accident took place at Berea, a suburb of Cleveland a short distance from the Cleveland Airport.

This catastrophe occurred just one year, to a day, after the bus crash at Bellevue, Ohio, on January 22, 1929, when twenty-one persons in a passenger bus were killed by a Lake Shore electric train at a grade crossing.

P. & A. Photos

GRADE CROSSING ON MAIN LINE, NEW YORK CENTRAL RAILROAD, AT BEREA, OHIO, SHORTLY AFTER SCHOOL-BUS ACCIDENT

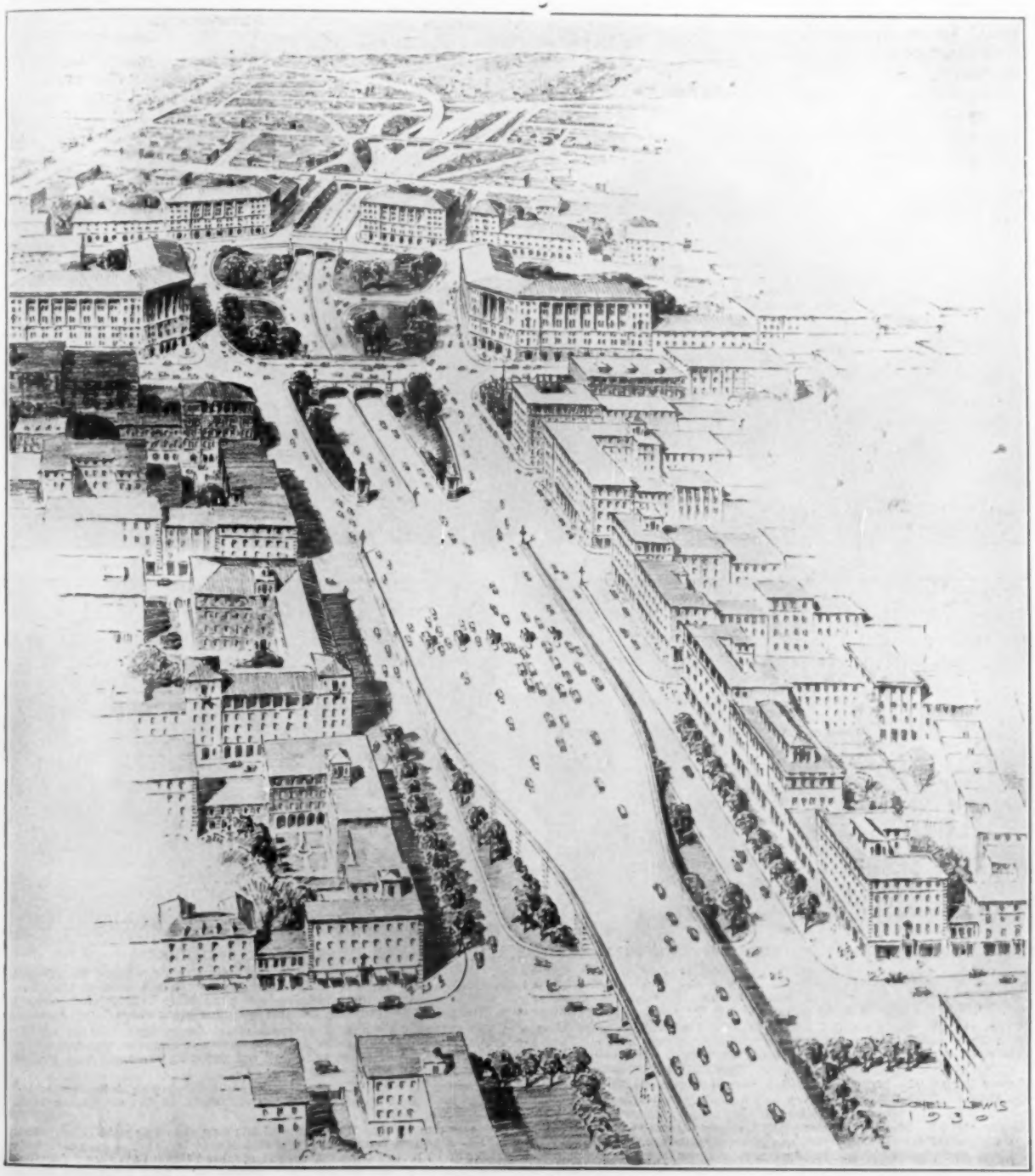
Speed and Safety at a Bridge Approach

REVISED plans for the western approach to the Hudson River Bridge, between Fort Lee, N. J., and New York City at West 179th Street, have recently been submitted by The Port of New York Authority to official bodies in New Jersey, for their acceptance. The plan proposed does away with intersecting crossings at grade, with left-hand turns, and with stops for traffic signals. It is expected that a handful of traffic men will be able to take care of the entire flow of traffic.

The scheme is deemed capable of handling the ultimate capacity of the bridge. Four lanes of traffic are contemplated initially. The original plan, ending in a plaza at Lemoine Avenue (the second from the bridge, in the ilustration) has been extended 2,000 feet further west.

Careful attention has been paid to the present configuration of the ground, and to the natural beauty of the territory.

The entire bridge approach from Hudson Terrace to Fletcher Avenue will be flanked by marginal streets in order that local traffic may be accommodated without interference with bridge and through-route traffic. Grades are not over 4 per cent except on some secondary connections.



THE NEW JERSEY APPROACH TO THE HUDSON RIVER BRIDGE AS IT WILL LOOK WHEN COMPLETED

State and county highways radiate in the distance. A study of the drawing will show how left turns and the need for traffic lights have been eliminated. The buildings shown represent possible future development

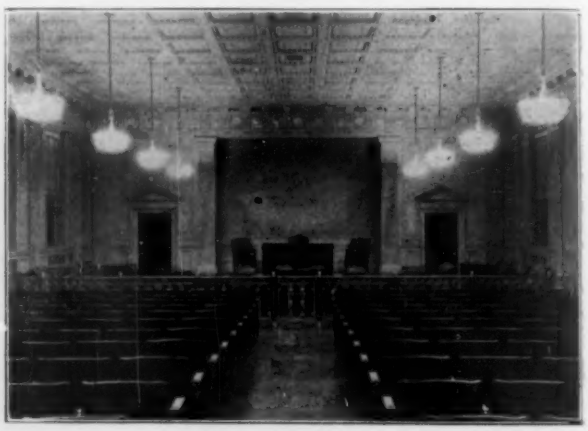
A Modern Municipal Building with Carefully Planned Lighting

By D. W. PRIDEAUX
ENGINEERING DEPARTMENT
EDISON LAMP WORKS
HARRISON, N. J.

THE city of East Orange, N. J., is now served by a splendid group of municipal buildings, which face the main line of the D. L. & W. R. R. and are viewed daily by thousands of commuters and travelers. They have added much to the prestige of this suburban city since their completion last year. The architects, John H. and Wilson C. Ely, of Newark, N. J., have created exteriors which are dignified and impressive, and on the interior have made, with due forethought, a physical arrangement which will permit efficient operation. Too frequently our public buildings are erected as a monument to the pride of the city fathers or as an architectural achievement with the practical phases of their use receiving too little consideration.

An Important Factor Frequently Neglected

This state of affairs is all too often true in respect to the lighting. The architect may have in mind merely creating a pleasing picture by day, and may select fixtures for the beauty of their metal work and symmetry of line, neglecting to study whether they will give adequate illumination. In other instances, in a desire to be original, the architect will insist on costly special designs and thus obtain fixtures probably not so good as something already on the market, and generally spending much more money. In still other cases the architect will put all his energies into designing a most strikingly impressive entrance with huge bronze luminaries. He is likely to spend almost all his lighting appropriation on the public spaces and with what little is left get the cheapest



TYPICAL VIEWS SHOWING LIGHTING OF THE EAST ORANGE, N. J., MUNICIPAL BUILDING

(Upper left.) The main entrance hall is designed along classical lines and is lighted by a central decorative luminaire containing 26 25-watt round bulb Mazda lamps. The metal parts of the fixture harmonize with the stair rails. Here an ornamental type of fixture is most desirable. Efficiency of utilization and eye protection are of secondary importance. Directly beneath the luminaire is a huge brass replica of the city's seal. This is the most brightly lighted part of the room, with an illumination of about 30 foot-candles, the average value being about 5 foot-candles.

(Upper right.) The Council Chamber is lighted by semi-indirect units of white diffusing glass with external metal decorations. These are on 15- x 20-foot centers and each has six 100-watt Mazda lamps. They are arranged to illuminate the fixture uniformly, and the multiplicity of light sources prevents shadow effects on the ceiling. The ceiling and side walls are light in color, reflecting and diffusing the light that strikes them. The illumination level is between 15 and 20 foot-candles.

(Lower left.) The Mayor's reception room has two candle-type fixtures each supplying eight 25-watt Mazda lamps fitted with delicately tinted silk shades. Such a fixture gives a homelike appearance and tends to reduce the feeling of formality. The illumination on the conference table is 7 foot-candles.

(Lower right.) The City Clerk's office is representative of most of the moderate-size rooms. These general working spaces require illumination of a high order for the employees to function effectively. Outlets are placed on 8- x 10-foot centers and 100-watt Mazda lamps in a standard type of metal and glass semi-indirect unit give well-diffused illumination in the order of 10 foot-candles. A special overhead cornice-type unit provides additional lighting at the window or wicket. The small conference rooms are lighted by similar fixtures "dressed up" with parchment shades and using 300-watt lamps, giving illumination of about 10 foot-candles. The Recorder's court room also uses the same type of fixture as in the City Clerk's office, with 200-watt lamps, outlets being spaced 11 x 18 feet.

possible fixtures for the parts of the buildings not seen by the public, yet where the real demands for adequate illumination exist.

The work carried on in the public building is no different from that of any other office. The clerks and employees should be provided with high-level lighting, evenly distributed, without annoying glare. It can be proved that adequate lighting of a type to eliminate eye strain is a decided economy.

In this particular case the designing architect did not fall into any of the pitfalls mentioned above. He spent his money for lighting wisely. In the main entrance, true, a special fixture is used, but this was carefully chosen. In the rooms requiring special decorative treatment suitable fixtures are installed, but these are relatively inexpensive and carefully shaded to prevent glare. For most of the building a standard or commercial type of fixture was adopted. The type chosen is relatively inexpensive, but not cheap. It is efficient and well designed.

Some Cities with Notable Increases in Street Construction Programs for 1930

SINCE the publication of the table of "Municipal Improvements Planned for 1930 in 318 Cities" at pages 160-162 of THE AMERICAN CITY for January, further information has been obtained from many of these cities regarding prospective street improvements, particularly in comparison with what was done in that field last year. Cities where an outstanding increase is contemplated include:

Akron, Ohio.—As reported by E. A. Kemmler, Highway Engineer, street improvements proper for 1930 are estimated at $2,700,000, as compared with $1,300,000 in 1929; grade separation, $757,000 for 1930 and $151,000 in 1929 (city's share, $425,000 for 1930 and $63,000 in 1929); street widening, $1,600,000 for 1930 and $60,000 in 1929.

Alliance, Ohio.—As reported by Mayor Carl Hari, street improvements for 1930 are estimated at $236,000, compared with $160,000 in 1929.

Beloit, Wis.—As reported by G. E. Heebink, City Engineer, new street construction for 1930 is estimated at $101,000, compared with $27,930 in 1929.

Berkeley, Calif.—Mayor M. B. Driver reports, "Our City Engineer informs me that in 1929 we expended $13,600 for street improvement. In 1930 we will expend $322,200."

Medford, Mass.—Mayor Edward H. Larkin reports that the amount of $460,000 to be expended in 1930 for street improvements is just double the amount expended in 1929.

Mobile, Ala.—Mayor Harry T. Hartwell reports that $1,000,000 was spent in street-paving projects during 1929, being part of a contract for $1,700,000 to complete a 30-mile paving program that will give the city 125 miles of paved streets. In 1930, $700,000 will be spent to complete the contract, and it is hoped that an additional contract for one million dollars' worth of paving will be let this summer.

Trenton, N. J.—City Clerk Leon D. Hirsch reports that the city will expend $120,000 in 1930 for street extensions, no similar work having been done in 1929. Other than this, new paving in 1930 will amount to $250,000, compared with $209,723 in 1929.

Winnetka, Ill.—H. L. Woolhiser, Village Manager, reports that two important projects, estimated at $325,000, will be done in 1930, having been deferred from 1929, in which year street construction amounting to approximately $75,000 was done.

Overcoming a Hazardous Oil and Gasoline Fire at Rochester, N. Y.

HOW FIREMEN SUBDUED A STUBBORN AND DANGEROUS BLAZE

A serious fire, destroying over 50,000 gallons of gasoline and 1,000 gallons of motor oil, recently occurred in the yards of the Sunshine Oil Co. at Rochester, N. Y. The fire, which was accompanied by explosions, threatened to spread to adjacent property. Fire-foam generated from 3 tons of Foamite powder used in three generators, was employed and assisted materially in keeping the loss down to $30,000. The photograph at the top shows firemen pouring some of the powder into a generator. At the left, wearing a soft hat, is City Manager Stephen B. Story, who, with Battalion Chief Reagan, risked his life in going under a heat-expanded tank to close a valve that was allowing gasoline to flow to the ground. The middle view shows a stream of water played against a tank to cool it. The picture at the bottom gives a general view of the fire-fighting activities

Transit Facilities by Special Assessment

The Twin Peaks Tunnel in San Francisco Provides an Impressive Example

STRIKING increases in land values in territory to which speedy and adequate transportation has been extended have caused many observers, both with the transit companies and in the municipal field, to advocate that such facilities be paid for by special assessments upon the property benefited. A successful instance of the use of this method, the financing of the Twin Peaks Tunnel in San Francisco, is discussed in the December *Electric Railway Journal* by M. M. O'Shaughnessy, City Engineer of San Francisco. A dozen years have elapsed since its construction, giving ample time to make its benefits evident. The value of adjoining land in 1928 had increased to five times that in 1912; or, adding improvements, to fourteen times.

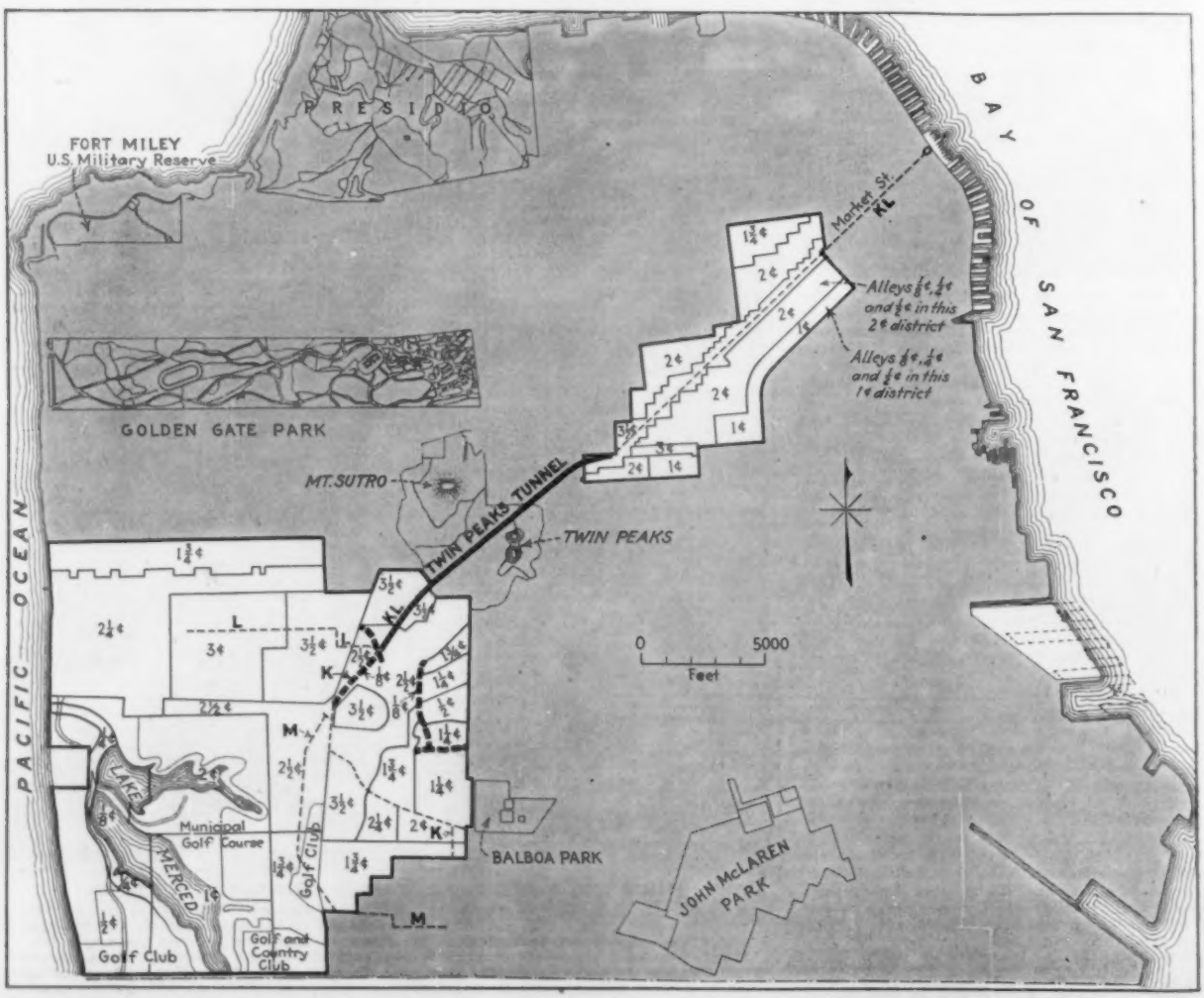
The *Journal* comments editorially:

"Financing of rapid transit construction in whole or in part by assessments on the benefited property, while frequently suggested, is usually looked on as a rather theoretical proposition. Yet seldom is it realized that there exists in San Francisco a clear-cut example of the effectiveness of this method of paying for such improvements. There a large section of territory in the city, not more than 4 miles from the center of business activity along Market Street, was for years a barren waste through lack of adequate transit facilities. This situation came about through the peculiar topography, a series of hills separating the district from the business section by an almost insurmountable barrier. It was only when this ridge was pierced by a tunnel and street railway service established that development began.

"That the opening up of this large tract was undertaken, was due to the foresight of the city engineer and the courage of the owners of the tract in agreeing to an assessment of the property itself in order to build the rapid transit line. A total of $4,000,000 was thus obtained to pay the entire cost of the improvement. Hence it has not become a burden on the city as operator of the railway system, and car service can be furnished at no greater cost than over a normal surface line of equal length. The property owners and the city itself have profited enormously, the one through enhanced values and the other through correspondingly greater tax assessments.

"The assessments for construction of the tunnel were by no means small, and represented a proportionally large increment of the value at that time, perhaps a quarter of the total. The increases in value that have come since the tunnel was built, however, have been so large that they dwarf the assessments to virtual nothingness. . . .

"While the Twin Peaks Tunnel is but one of many instances where property values have increased enormously through rapid transit, it is perhaps the only one of any magnitude where the property owners affected have paid the cost and then reaped the benefit. As such it is an object lesson worth the attention of city planners who are seeking to add to the productive area through major improvements."



Courtesy of Electric Railway Journal

THE ASSESSMENT DISTRICTS FOR THE TWIN PEAKS TUNNEL, SAN FRANCISCO, CALIF.

Units of Measurement for Street Cleaning, Refuse Removal and Disposal

Prepared from a Tentative Report by the National Committee on Municipal Standards

IT would seem that the purpose of keeping a city clean and free from refuse can logically be separated into three operations: (1) cleaning of streets, which is merely the accumulation of refuse from the street surface in sufficient amount to expedite its removal to a disposal point; (2) removal from its source or point of concentration of all refuse, including street sweepings, garbage, ashes, rubbish, dead animals, leaves, etc., the removal of which is essential to the convenience of the public or the protection of its health; (3) disposal of all such refuse by means of incineration, reduction, filling, dumping at sea, etc.

Purpose of the Plan

The plan proposed has for its purpose (1) the setting-up of units of measurement; (2) the establishment of a definite and uniform procedure for estimating the amount of work and its cost; and (3) the development of a means of financial and administrative control for (a) street cleaning; (b) refuse removal; (c) refuse disposal.

Different Bases of Measuring Governmental Activities

Municipal activities may be measured in one or more of three ways: (1) on the basis of purchases made, that is, the cost of labor, supplies, materials, repairs, etc.; (2) on the basis of work done, that is, the area of streets cleaned, tons of refuse removed and disposed of, etc.; (3) on the basis of the result, that is, the quality of the work done, which brings up such questions as what is a clean street, adequate refuse removal, etc.

Only the first two are discussed in the report, and suggested forms are submitted which help in carrying into effect the plans presented.

Steps in Developing Units of Measurement

The five steps necessary to develop a unit of measurement which will be generally understood and applicable are: (1) identification of the activity; (2) determination of the unit of measurement; (3) determination of factors governing the cost of the activity; (4) designation of cost in terms of the unit of measurement and (5) development of an impersonal means of applying the unit of measurement to the activity.

Identification of the Activity

Street cleaning should include the cleaning, irrespective of method, of all paved streets, alleys, sidewalks or other public ways.

Refuse removal should include the loading and transporting to the disposal plant of all refuse, irrespective of its source or character, including street sweepings, leaves, snow, garbage, dead animals, night soil, ashes, rubbish, contents of catch-basins, etc.

Refuse disposal should include the ultimate disposal of all municipal refuse, whether it be by dumping, burial, pig feeding, incineration, reduction or other methods.

Determination of a Unit of Measurement

For street cleaning the unit of measurement should be the "great square," meaning 10,000 square yards of pavement surface, regardless of whether the full width of the street is actually covered by hand or machine and irrespective of the method used.

For refuse removal, the unit should be the ton-mile, which is equivalent to hauling one ton the distance of one mile.

For refuse disposal, the unit should be the ton.

Factors Governing the Cost of the Activity

The items of cost for each activity should include all items known exactly and directly chargeable to that particular activity. Any indirect costs which must be more or less arbitrarily apportioned, such as salaries and expenses connected with the overhead administration of the work, must not be included. The items on which the direct cost shall be based should be reported upon separately under the following headings: (a) personal services, covering salaries and wages; (b) supplies and material consumed in the work, covering brooms, gas, tires, etc.; (c) plant and equipment charges, including repairs, depreciation and interest; (d) purchase of equipment, machinery, etc.

Costs in Terms of the Unit of Measurement

The cost of street cleaning should be expressed in cents per great square, the cost of refuse removal should be expressed in cents per ton-mile, and the cost of refuse disposal should be expressed in cents per ton.

Applying the Unit of Measurement to the Activity

The area used as a basis for computing the number of "great squares" cleaned on a street should be the total paved area covered, measured from face to face of curb and irrespective of what proportion of the total width of the pavement is actually swept, flushed or cleaned by any method.

In refuse removal, the tonnage should be computed by cubical content of truck body and by weighing a sufficient number of loads to afford a reliable basis for such computation. The mileage will be based on the length of the route traversed from the receiving point to the disposal point. The product of the two will give the number of ton-miles.

The tonnage for refuse disposal may be computed in a manner similar to the method stated for refuse removal.

A Concerted Effort

The National Committee on Municipal Standards is composed of three representatives of the National Municipal League, three from the Governmental Research Association, three from the International City Managers' Association and one representative of the United States Bureau of the Census. This Committee, as its first task, selected one municipal service in an effort to establish a technique which might be applicable to other services. The service selected was that of street cleaning, refuse removal and disposal. Realizing the necessity of getting the cooperation of the men in the field, the International Association of Street Sanitation Officials was invited to appoint a committee to cooperate in devising units of measurement for this particular service.

The report, which, as mentioned in The American City last month, has been adopted in principle by the International Association of Street Sanitation Officials, contains suggested forms for preparing administrative work programs and reporting actual costs, together with a list of factors influencing unit costs in different cities. The document is obtainable from the National Committee on Municipal Standards, 923 East 60th Street, Chicago.

A Regional Plan for the Nation's Capital

THE city of Washington owns the distinction of being the world's first planned capital. There are many who believe that had Major L'Enfant's original design been more carefully adhered to, the city would have been even more beautiful and splendid than it now is. In any event, the arrival of rapid transit, the motor car and the airplane would in themselves suggest that any plan, no matter how wisely or prophetically conceived, might appropriately be reconsidered. These new modes of transportation have altered spacial relationships and call for the planning of a region of more generous area.

Three years ago Congress recognized this need and appointed a National Capital and Park Planning Commission. A summary report of this Commission has just been presented, with plans and recommendations for the development of the region of which the city of Washington is the central urban element. This report was embodied in an address of Lieut-Col. U. S. Grant, 3rd, Executive Officer of the Commission, at a joint meeting, on January 17, 1930, of the American Society of Landscape Architects and the American Civic Association.

The Battle of the Streets

Regarding "the battle of the streets" as the most challenging aspect of modern city life, the Commission put it first on its program. "Highways," says the Commission, "constitute the most important contribution made at public expense to the individual's life." In this connection the Commission pays merited tribute to Major L'Enfant's prescient outlines:

"Fortunately, Washington was originally laid out on a scale amply adequate for a large city, and within the limits of the original L'Enfant plan a width has been reserved between buildings which permits streets to be widened at the relatively low cost of moving back the curb, extending the pavement and sacrificing one row of street trees. When we stop to realize that such street-widening operations are costing from four to twelve million dollars a mile in other cities, where inadequate rights-of-way have been retained, we appreciate the cash value to our generation of Major L'Enfant's foresight.

Two Able Grandsons of Famous Grandfathers

have been in responsible charge of the administrative and technical work on the new regional plan of Washington and its environs, described in the accompanying article.

Lieut.-Col. U. S. Grant, 3rd, grandson of the President and Civil War General, is Director of Public Buildings and Parks of the District of Columbia, and has been serving as Executive Officer of the National Capital Park and Planning Commission.

Charles W. Eliot, 2nd, City Planner of the National Capital Park and Planning Commission, is grandson of the late Charles W. Eliot, for many years President of Harvard University.

"Moreover, his plan has been found to favor traffic circulation by the system of avenues, superimposed on the usual grid of north-south and east-west streets, which join by the shortest diagonal line various important localities and centers, and permit a free exchange of traffic. To be sure, these avenues give rise to some awkward intersections, but this problem he solved in most cases by the interposition of a circle, which not only affords space for a small local park and an appropriate site for a monument or fountain, but also permits continuous gyratory traffic—a most remarkable case of the best planning in 1791, based on consideration of what was evidently best then for the amenities and beautification appropriate to the Nation's Capital, producing a result which, under the entirely changed traffic conditions of the present, has been found to be the best way of passing traffic by such multiple street intersections."

The Commission feels that such is the excellence of L'Enfant's plan that even under modern conditions Washington will not have to have recourse to such expensive public works as subways, double-deck streets, overhead pedestrian crossings and similar contemporary contrivances. Nothing of this sort will be, at least immediately, required.

Colonel Grant reminds us of the criticisms and witticisms early indulged in at our young capital's expense. The Irish poet, Thomas Moore, one of our first notable visitors, wrote:

This embry-o capital, where fancy sees
Squares in morasses, obelisks in trees;
Which second-sighted seers, e'en now, adorn
With shrines unbuilt, and heroes yet unborn,
Though naught but woods and Jefferson they see,
Where streets should run and sages ought to be.

"We today," concludes Colonel Grant, "can only be grateful to our ancestors for the ridicule they suffered to preserve these values for our benefit at the present time."

Early Foresight—Later Neglect

Unfortunately, succeeding generations did not always exercise the same understanding foresight. Many things were done in discord with the original plan, and frequently it was altogether forgotten. With the great increase of population following the Civil War, subdivisions grew up outside the limits of L'Enfant's plan which are not at all coordinated with it. These unplanned, or ill-planned, subdivisions constitute, the Commission tells us, its hardest problem.

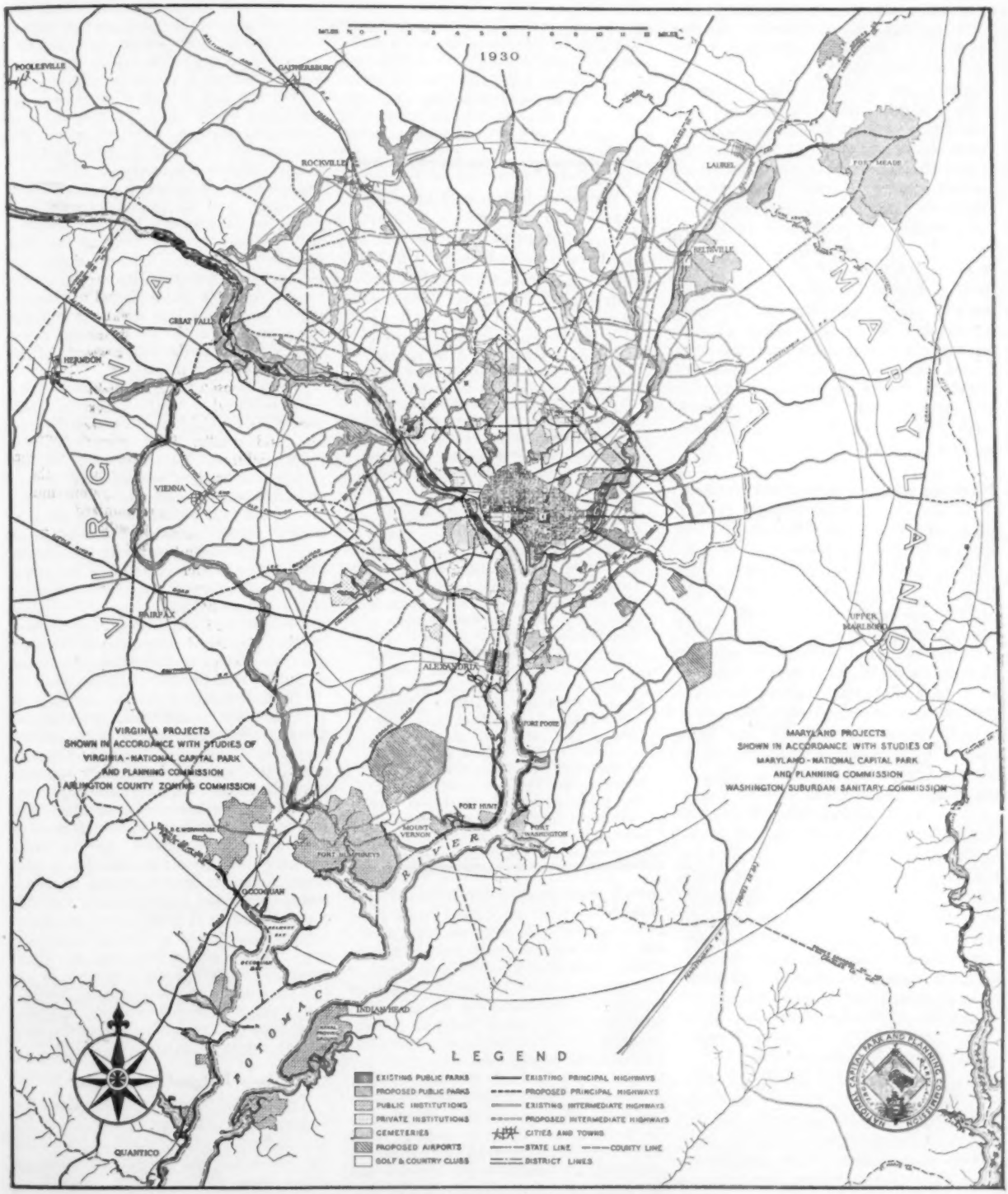
Colonel Grant continues:

"By 1893 the situation had grown sufficiently serious to be recognized by Congress by the passage of legislation, subsequently extended and amended in 1896, to require the District Commissioners to make a highway plan of the entire District of Columbia, and by setting up a special Highway Commission to act on any changes in it. In general, the system of streets within the L'Enfant plan was accordingly extended to the corporate limits.

"But this highway plan was for the days of animal-drawn transportation and to meet traffic condtions incident thereto. With the advent of the automobile and motor truck, traffic conditions and requirements have changed. The need for differentiating between streets according to their use and purpose, just as telephone lines, sewer lines and other public works

are designed to meet their special purposes economically, is being more and more generally appreciated. The differentiation between thoroughfares or traffic arteries, and the secondary streets or system of veins to pick up local traffic and bring it into the thoroughfares, permits curvilinear location of the latter, their relation to the natural contours of the land and the preservation of attractive topography, of trees and of the natural surface soil, as well as the lengthening of blocks and other variations which not only add measurably to the individuality and interest of each residential neighborhood, but also save materially in both the first cost of development and the annual cost of maintenance and administration.

"It is estimated that the changes which our Commission, as the successor to the Highway Commission, has already made with the cooperation of the city officials, have reduced the ultimate cost of the street system by about $500,000; and that similar changes applied to the remaining undeveloped area of the District should effect an additional reduction of over



REGIONAL PLAN OF WASHINGTON AND ITS ENVIRONS

This master plan and many plans of its important details were presented at a public meeting in Constitution Hall, Washington, D. C., on January 17, 1930. A message from the President of the United States was followed by addresses by Albert E. Ritchie, Governor of Maryland; John Garland Pollard ,Governor of Virginia; Arthur A. Shurtleff, President, American Society of Landscape Architects; and Lieut.-Col. U. S. Grant, 3rd, Executive Officer, National Capital Park and Planning Commission. The presiding officer was Frederic A. Delano, Chairman of the Commission and President of the American Civic Association

$3,000,000 in first cost and a decrease of about $325,000 annually in maintenance. When 29.3 per cent of a city's usable surface is reserved for streets and alleys, as is the case in Washington, the best possible use of the land so placed in public hands is an economic problem deserving the most careful study, and one which should not be left to be solved by the method of appropriation in compliance with the loudest-expressed local demands."

Accordingly, the Commission has prepared and presented to Congress a major thoroughfare plan. This plan stresses the great existing variety of street widths and the manifest advantage of some standardization in respect to these. One of the principal radial thoroughfares is noted as having twelve changes in width. Vermont Avenue, to take another instance, leads into a congested cross street of less capacity. The Commission has made studies, some of which have already been published, of optimum widths of various traffic requirements. The distribution of inflow and outflow of traffic around the perimeter of the congested parts of the city has also been cared for. Some improvements, such as the straightening of Michigan Avenue, have already been effected upon recommendation of the Commission.

Planning a Seamless Regional Garment

As for the regional aspect of this phase of its work, the Commission has recognized that its plans for the District of Columbia must be woven with those of Maryland and Virginia into a seamless garment. In working out a connection for Massachusetts Avenue with the Maryland road system, and for the approaches of the Arlington Memorial Bridge with the roads of Virginia, the Commission acknowledges the hearty cooperation of the highway and local officials of both states. But mutuality of interest does not stop at the edges of the region. Washington must be linked with the road systems of metropolitan Baltimore on the north and of Richmond on the south. Indeed, it must be related to the road system of the entire county. The Commission is particularly concerned, in this connection, to provide by-pass arteries to permit Richmond-bound traffic from Baltimore and Baltimore-bound traffic from Richmond to avoid congestion, and to prevent the congestion of Washington's own highways. This is well known to be of great advantage to all concerned.

This Commission has found, as others have found before it, that the railroads constitute an element of rigidity in the scheme of things. The Commission has given serious thought to the elimination of grade crossings and to the establishment of rail and water terminals. Upon the adequacy and wise location of these the business life of the community depends. The Commission finds the greatest potentiality for these in the region of Buzzard's Point. Provision is also being made for the present and future needs of aviation. These include plans for a municipal airport, possibly at Gravelly Point.

Special Provisions for Parks and Playgrounds

Concerning parks, the Commission is particularly explicit. To quote again from Colonel Grant's address:

"The highway plan of 1893-98 was strictly a street plan, and did not extend into the new areas even the local city parks so profusely scattered throughout the plan of L'Enfant. Although some important park projects were adopted individually, such as the Rock Creek Park, which retains a uniquely picturesque sylvan valley for the recreation of the city dweller, and the filling of the Potomac flats, where a little less than a thousand acres have been reclaimed by the U. S. Engineer Officer and turned into a most important center of public recreation and athletics—comprising six nine-hole golf courses, two polo fields, fourteen baseball fields, twenty-nine tennis courts, five football fields, archery courts, a large basin for boating, etc.—yet, in general, park needs were being overlooked. L'Enfant's plan with its central axial avenues was forgotten, and many changes in this central system were being developed in a manner that would soon have made reversion to the original plan impracticable. In 1901 Senator McMillan, Chairman of the District of Columbia Committee of the Senate, secured authority for a study by experts of the steps that should be taken to develop and beautify the city in a manner appropriate to its purpose. This commission's work and recommendations are so well known, especially as to the central area, that I will stop in regard to the latter only long enough to draw the comparison between the great avenues proposed and the existing condition of the Mall, or at least the condition that existed when the present public building program was adopted. The failure to develop unusual potential values is evident.

"For the park system of the District of Columbia, which will be made possible of realization when the Capper-Cramton Bill becomes law (H. R. 26, S. 2708) the Commission submits a general plan. The Commission now has authority to acquire land for parks, and an annual appropriation which has permitted it to make considerable progress towards carrying out this program. However, if every dollar expended is to bring in its maximum return in land, the whole capital investment should be made within a short period, say three years, to avoid the development for other purposes of the land needed and the excessive increase in cost.

"The proposed program includes a carefully balanced recreation system, comprising large neighborhood recreation centers, and smaller local playgrounds for small children. Evidently, the various elements of such a system must be coordinated and harmonized so as to provide in the best possible way for all community needs, including the relation of outdoor exercise and play with the schools, libraries, and other community activities, and so as to prevent duplication of work and of expenditures among the existing government and social organizations, such as the Municipal Playgrounds Department, the Board of Education, the Board of Public Welfare, City Library, etc.

"There is economy in the purchase of deep-cut valleys and their retention as natural parks, since the use of the stream for surface drainage saves considerable expenditure for storm sewers. In the case of the Rock Creek and Potomac Parkway, this saving reaches several millions, not to speak of the high traffic value of a low-level road connecting the important residence district of the northwest and Chevy Chase in Maryland with the Federal buildings and central area of the city, without crossing at grade any of the street thoroughfares north of Pennsylvania Avenue. Philadelphia a few years ago spent nearly $20,000,000 to cut just such an artery through a wholly built-up section, and I am told is now deriving annually an income equivalent to the entire first cost on the appreciated land values."

Low Height-Limit Urged

Height limits have also engaged the Commission's attention. It considers the city fortunate in having had the 1910 law preventing the erection of buildings higher than 130 feet. It is inclined to regard even that limit as too high and believes that the 110-foot limit originally established by the Zoning Commission should have been adhered to.

From a letter written January 17, 1930, by PRESIDENT HOOVER to Frederic A. Delano, Chairman of the National Capital Park and Planning Commission:

A continuous study of the character and probable growth of this city, with intelligent anticipation of such growth, is today a first necessity of city progress and of the great national function of our capital. The determination of the scores of problems of transportation, of abolition of slum areas, development of park and recreation facilities, provision for the needs of the school system and for the safety of children, coordination of governmental, industrial, and residential sections, and, above all, beautification, presents a combination of problems for which there must be, not only advance plans, but also constant guidance. This Commission has made a notable record in all of these directions.

It is our national ambition to make a great and effective city for the seat of our government, with a dignity, character, and symbolism truly representative of America. As a nation, we have resolved that it shall be accomplished. To succeed in the fullest measure, we have need not only for planning within the District of Columbia, but also for cooperation from the adjacent states.

THE MONTH IN PUBLIC HEALTH

Conducted by JAMES A. TOBEY, Dr. P. H.

The Influenza Germ

A FLURRY of excitement was caused in the middle of December by newspaper reports that the germ causing influenza had been discovered by Professor I. S. Falk, Ph.D., and his associates at the University of Chicago. The American Medical Association, always quick to condemn, lost no time in issuing a statement to the effect that the announcement should be viewed with suspicion and that the public should reserve judgment.

A preliminary report on the etiology of influenza appears, however, in the *Journal* of the American Medical Association for December 28, 1929, under the signatures of I. S. Falk, Ph.D., R. W. Harrison, M.S., R. A. McKinney, B.S., and J. W. Stuppy, Ph.D. Experiments on monkeys are described, in which pleomorphic streptococci apparently gave rise to the disease. The investigators conclude from the evidence that this germ may have caused the influenza epidemic of 1928-1929.

In an editorial comment on these studies, it is pointed out in the same *Journal* that the organism causing influenza has been "discovered" on numerous occasions since 1900. Every decade has, in fact, yielded its quota of influenza germs. "The work of Falk and his associates," says the *Journal*, "is of great interest and should, no doubt, be given serious consideration in any survey of the bacteriology of influenza. To intimate, as was done in numerous interviews, editorials, and other publicity relative to this discovery, that the way is now clear for a vaccine or antitoxin or any other specific method of treating influenza, is to go far beyond the actual evidence provided by this bacteriologic research."

Publicity by scientists and that of health departments seems to involve different characteristics and standards.

Barber-spread Diseases

A LITTLE item in the *New England Journal of Medicine* for December 12, 1929, conveys the interesting information that a survey by the Massachusetts State Department of Health showed that in data secured from 1,675 physicians only 40 persons claimed to have been infected in barber shops. This Department has decided that barber shops can be satisfactorily regulated by local health authorities.

Health Activities in Pueblo, Colo.

THE people of Pueblo, a city of 60,000 population in Colorado, are extended a cordial invitation to visit their Health Department and ask questions and familiarize themselves with its activities. This invitation appears in *Health*, the bulletin of the Department. Volume III. No. 13, edited by Dr. W. E. Buck, Chief of the Department of Health, Inspection and Sanitation of Pueblo.

This bulletin, which is undated, contains a readable outline of the functions, duties, and organization of local health work, its purpose being to acquaint the public with the activities of this important branch of the city government. Such information, when it is well presented, is always worth-while.

The Health Committee of a City Club

IN Portland, Ore., the City Club has among its eight sections one on public health, presided over by Dr. J. Earl Else. A considerable portion of the club's bulletin for December 20, 1929, is given over to a report by this section on a proposed milk ordinance which was then before the City Commissioners for consideration. The City Club's committee believes that Portland's milk supply is not adequately regulated and that this important and essential food should be more thoroughly safeguarded. All phases of the proposed ordinance are set forth and discussed, and a recommendation is made that it be endorsed by the City Club. The report was accepted by the Board of Governors and ordered submitted to the membership. This is a good example of public health enterprise by a leading civic organization.

The Extent of Illness and Its Care in the United States

THERE are more physicians in our country per thousand population than anywhere else in the world. We are also rather well supplied with hospitals and nurses, not to mention clinics and dispensaries. Official and private agencies are zealously active in the endeavor to safeguard public health.

Despite all these advantages, the United States seems to endure a rather tremendous amount of disabling sickness. In recent studies issued by the Committee on the Cost of Medical Care, of which Harry H. Moore, Ph.D., is director, the available statistics on morbidity have been collected and deftly summarized in one study by Alden B. Mills, while medical facilities, mostly curative, have been outlined in another by Allon Peebles. In commenting editorially upon these able investigations, the *Journal* of the American Medical Association for December 7, 1929, unbends sufficiently to concede that "the dulness of ordinary statistics is lost in some of the discoveries" of this Committee.

They are. It seems that people in the United States are disabled by sickness at least once annually, men once a year, women from once to twice, and children more than twice in every school year. Some 36,000,000 wage-earners lose 250,000,000 work days a year, and 24,000,000 school children lose 170,000,000 days in school years. The respiratory diseases, such as colds, influenza, and bronchial conditions, cause most of the devastation, with digestive disorders close behind.

Many other statistics of interest and value are contained in these and other preliminary reports of the Committee on the Cost of Medical Care, copies of which may be obtained from its headquarters at 910 Seventeenth Street, Washington, D. C.

The entire issue of the *Survey Graphic* for January 1, 1930, is devoted to this problem of the cost of health and of cure. The articles, by physicians, economists, and others, most of whom have already written extensively on the subject, are, in general, interesting in their presentation of the problem, but somewhat barren of practical solutions. The monthly *Bulletin* of the American Medical Association for December, 1929, is likewise full of this topic, from the standpoint of the practitioner. The facts are, at any rate, being mobilized, and that is some progress.

To Expound the Public Health Movement

A TWO-WEEKS intensive course on the principles and problems of the public health movement is to be given from March 3 to 15, 1930, at the Russell Sage Foundation, 130 East 22nd Street, New York City, under the auspices of Columbia University Extension, in cooperation with the De Lamar Institute of Public Health and the National Health Council. This course, designed for tuberculosis and public health workers, nurses, teachers, social workers and volunteer health workers, will be conducted by Philip P. Jacobs, Ph.D., of the National Tuberculosis Association.

The Name Is Viosterol

COD liver oil has long been recognized as a valuable food or medicine which prevents rickets and builds bodily resistance. It contains vitamins A and D in abundance and is now routinely employed as a supplementary food in infant feeding.

Recently a therapeutic substitute for cod liver oil has appeared. It is irradiated ergosterol, a product possessing 100 times the potency of cod liver oil with respect to its anti-rachitic properties. For this reason, this substance must be carefully used and only in accordance with directions of a physician.

The name chosen for this irradiated ergosterol is "viosterol." This common name was selected by the Council on Pharmacy and Chemistry of the American Medical Association in accordance with a well-established custom of giving names of general application to important pharmaceuticals. Most drug manufacturers have adopted this common appellation, though at least one concern has attempted

to popularize its own trade name, a procedure which would tend to give it a monopoly on the sales of the product.

"In the present instance," says an editorial in the *Journal* of the American Medical Association for October 5, 1929, "physicians must recognize the necessity for upholding to the fullest extent the Council's decision regarding irradiated ergosterol. If this product is prescribed, the name to be used is 'viosterol' and the brand specified one of those accepted by the Council. Not "vigantol,' not 'acterol,' not any other copyrighted name, but the general Council accepted name 'viosterol.' The name is 'viosterol.'"

A Timely Report

ANNUAL reports of municipal health departments usually appear from one to six months or more after the end of the calendar year. When, therefore, a city health officer presents his report for 1929 on the last day of the year, it is an event, and when the scene of this occurrence is the largest city in the United States, the event is all the more noteworthy.

On December 31, 1929, Health Commissioner Shirley W. Wynne of New York City released to the press copies of his Annual Report to the Mayor. An interesting feature of this prompt summary of public health activities in our largest city was the fact that spaces had been left blank in the mimeographed material and figures were written in with pencil, so that the data were correct up to midnight of the last day of the year. This is a real achievement.

Not only is this report novel, but it is interesting. Every word of it is worth reading, despite the fact that it comprises nearly seven typewritten pages of legal size paper. There is nothing distressingly technical about the data and they are couched in phrases that appeal to the average lay reader. Thus, the report begins with the statement that there were 609 fewer deaths in the city than in the previous year. A few paragraphs further along is the significant information that 870 more children "survived in 1929 to brighten the homes of their parents—children who would have died had the rate of 1928 prevailed."

The publicity service of the New York City Health Department is a well-developed organization, worth emulation in other communities. Almost every day news releases emanate from the headquarters of the Department, usually containing information attributed to the Health Commissioner. The newspapers use this material regularly because it is practically always interesting and worthwhile. They often reduce the quantity, but it is seldom that one of the Health Department items is passed up completely.

It would be possible to use some of this material constantly in this department of THE AMERICAN CITY. It is not because of any lack of value that it does not appear more frequently, but because there seems always to be much more general material from all over the country than can possibly be employed in any one month. A whole magazine could be devoted to "The Month in Public Health," and that is a sign of real progress in this important matter of the conservation of national vitality.

Popular health information and instruction, such as that put out by the New York City Department of Health, performs a real duty in enlightening the people regarding one of the most important of all governmental activities—the endeavor to protect, preserve, and promote the health of all the citizens. The effort is highly commendable.

Sewage and Garbage Disposal May Be Privately Operated as Public Utilities in Michigan

UNDER the provision of Act 160, Public Acts of 1929, of the Michigan State Legislature, it is believed that sanitary problems can be more successfully handled by municipalities and that public health will be materially aided and stream pollution to a great extent eliminated. Many sewerage systems in Michigan cities have been inadequate to accommodate the demands made upon them. The rapid growth of certain Michigan industrial centers has made them unable to satisfactorily handle the sewage from residential sections of the city, to say nothing of taking care of the sewage from large factories. Much of the sewage in such cases has been allowed to run into lakes and rivers, and the natural result has been the pollution of the waters affected.

The main reason that municipalities have been unable to cope satisfactorily with sewage and garbage disposal has been the inability of the cities to get funds with which to build adequate sewage and garbage disposal systems. In some instances cities have already reached the limits of bonded indebtedness, and in other cases, regardless of the necessity, the voters at elections held for that purpose have not authorized the issuance of bonds for sewage and garbage disposal purposes.

Act 160 of 1929, as a curative attempt to aid situations and conditions outlined above, provides in main for the following:

"(a) That any county, city, township or village, either independently or jointly by agreement, may provide, with the approval of the State Department of Health, a sanitary means of disposing of garbage, sewage, etc., with the power to condemn land, either within or without the corporate limits of the municipality in question;

"(b) Such sewers, sanitation systems, etc., are defined as a public utility within the meaning of any constitutional or statutory provision;

"(c) Governmental agencies are authorized, with certain restrictions, to issue faith and credit bonds beyond the general limits of bonded indebtedness prescribed by law;

"(d) Any local unit of self-government may grant a franchise for a period not to exceed 30 years to any private corporation to construct, own or operate a sewage disposal plant, sewer system, etc.;

"(e) Such franchise may authorize said private corporation to charge any person, firm or corporation, from which sewage or garbage is received, such fee as the Michigan Public Utilities Commission may deem to be reasonable; also it is provided that said Public Utilities Commission shall serve as the arbiter in the event that the municipality and the private contracting corporation cannot agree as to the service rate to be charged owners of premises.

According to Robert H. Dunn, a member of the Public Utilities Commission of Michigan, the act does away with any reason why any municipality cannot have a proper and adequate garbage or sewage disposal system. If counties, cities or townships have not the necessary funds to operate or complete the work in question, or if they cannot get them as the result of the authorization of the proper amount of funds by a vote of the people, they can now make a contract that will give them what they need.

In the event of making a contract with a private corporation, no municipality need feel that its interests will not be safeguarded, for the securities of corporations undertaking the construction and operation of sewage treatment and garbage disposal plants under this act must be approved by the Michigan Public Utilities Commission; the State Department of Health must approve all plans and specifications and, in the event of rate disputes, the Public Utilities Commission is the arbiter.

Act 160 of the Public Acts of 1929 provides that "governmental agencies or municipalities issuing bonds hereunder in excess of the limit of the authorized bonded indebtedness fixed by statute or charters the principal and interest of which are not to be paid out of funds created from service charges as hereinbefore provided, may raise such a sum annually by taxation as the legislative body or respective legislative bodies may deem necessary to pay the interest on such bonds and create a sinking-fund to pay the principal thereof as it falls due."

The law also states that "such annual amounts may be in excess of the authorized annual tax rate fixed by the statutes or charters."

AIRPORTS AND AVIATION

A Monthly Department on Aeronautical Activities of Municipal Interest
Conducted by ARCHIBALD BLACK, President, Black & Bigelow, Inc., Air Transport Engineers

The New England Airport Conference

A FINE example of cooperative effort was shown in the case of the second New England airport conference held in Bridgeport, Conn., on December 16. A representative group of airport managers, operators and engineers were present, taking part in very constructive discussions covering various problems of airport design and operation. Perhaps the most important topic considered at the meeting was the question of selling aviation in general—and airports in particular—to the public. It was more or less generally admitted that the airport industry has been inclined to place an air of mystery around airplane operation and that the general public must be educated to accept the airplane as a medium of transport.

One of the interesting points of the conference was the appearance of representatives of several smaller cities not yet equipped with airports but where interest has been sufficiently aroused to warrant the chamber of commerce or the municipal officers in making the trip to the conference. One of the constructive suggestions brought out was that smaller cities which are unable to finance airports at present might cooperate with the industry to the extent of providing emergency landing fields on recognized air routes, supplementing those already established which at some future date might be developed into airports. It was decided to make these conferences regular quarterly affairs, and a permanent chairman was appointed, the city of Providence, R. I., being selected for the next conference, which will take place in March. It is interesting that New England, generally regarded by the rest of the country as being very conservative, should have taken the lead in organizing these sectional airport conferences.

Lehigh Airports Competition

WHATEVER opinions one may have on the value and originality of the winning designs, the Lehigh Airports Competition should be given credit for drawing nation-wide attention to the problems involved in airport design. While developments of the past few years have resulted in the appearance of firms specializing in airport design, we still find many municipalities attempting to go their way alone. The Lehigh Competition in this regard is serving to show the necessity for intelligent airport planning, and wide publicity is being given to the various designs awarded prizes. The variety of the designs receiving awards or mention shows the room for difference in opinion regarding airport layout. Perhaps we have no right to expect the appearance of cure-alls or panaceas as resulting from such competitions, and in this regard the Lehigh Competition did not disappoint us. At the same time, it is serving some very useful purposes in having drawn together a valuable fund of information, in crystallizing some ideas and broadcasting a variety of airport plans, even though the experience of the airport engineer is still required to fit these into the local surroundings.

Airports on Building Roofs

FROM time to time we hear proposals of airports to be constructed on the roofs of buildings so that airplanes are enabled to arrive at, and depart from, the center of a city. In *Engineering News-Record* of December 12, 1929, editorial space is given to comment on a building planned for Los Angeles and said to incorporate landing facilities on the roof. In this particular case an area 200 feet by 1,200 feet would be available—giving a landing deck substantially equal to that planned for the Armstrong seadrome, now being constructed for use in mid-ocean between the Atlantic coast and Bermuda. It is a far cry, however, from a landing stage in mid-ocean to one located on a high building in the center of a city. At sea we have no obstructions in the surroundings, and the wind is relatively steady. Elevated landing platforms above the city buildings have different conditions to contend with and consequently a *very* large area becomes necessary if the element of safety is not to be sacrificed. It has become generally accepted that the flying field area at an airport should be 2,500 feet, more or less, in each direction—and even with this area some restrictions are placed upon surroundings to insure good approaches. If we are to build airports atop our buildings, the requirements of safety will make it necessary to increase this area to at least 3,000 feet, and perhaps more, unless we develop some mechanical device for accelerating the start of the airplane and retarding its run after landing.

The Guggenheim Safety Competition Justifies Its Effort

AFTER conducting extensive tests of the aircraft submitted in the Daniel Guggenheim Safe Aircraft Competition, the judges finally eliminated all but two of the contestants, these being the Curtiss and the Handley-Page entries. In the final tests, the Handley-Page entry complied with most but not all of the requirements, while the Curtiss Tanager passed all of the minimum requirements and after deliberation was announced as winner of the contest, a grand prize of $100,000 being awarded to the Curtiss Aeroplane & Motor Co., of Garden City, N. Y.

The Guggenheim competition has created considerable interest within the past two years and there has been much discussion among airplane designers regarding the practicability of meeting the minimum requirements laid down under the rules of the competition. However, the result fully justified these and there would have been no purpose in a competition of this kind where the minimum requirements should be met by something that was merely "another airplane." The Curtiss Tanager incorporated certain features which have been developed in the past years, combining these and also adding an innovation in the floating aileron which makes it possible for the pilot to maintain perfect control of the aircraft in all positions of flying.

The Tanager was the result of two years of experimental work in the wind tunnel at the Garden City plant and was built with the object of obtaining an airplane which is as nearly as possible fool-proof. In appearance, there is nothing really freakish about this design, despite its radical departure from the viewpoint of performance. It is a three-place, cabin biplane departing from the conventional design chiefly by the addition of three safety features—automatic wing slots, controllable wing flaps, and the new type of aileron which we have just mentioned.

THE CURTIS TANAGER, WINNER OF THE GUGGENHEIM SAFE AIRCRAFT COMPETITION

This aileron represents the entirely new feature brought out in this design and differs from other ailerons, as at all times it automatically assumes a position parallel to the motion of the airplane with regard to the surrounding air. Hence, it is

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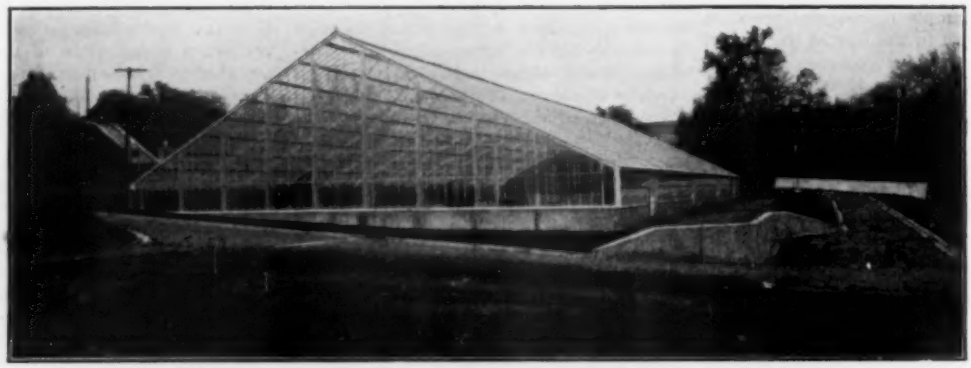

Design and construction of work under direction of Clyde Potts, Consulting Engineer. Frederick Guerin, resident engineer. Super structures designed by Abraham Slavin, architect. Detail design of plant supervised by Weston Gavett. Sludge bed Glass-Over furnished by Lord & Burnham Co.

Outstanding Features of the Boonton Sewage Disposal

THE Sewage Treatment Plant at Boonton, New Jersey, was constructed by the city of Jersey City in connection with a trunk sewer, to treat the sewage of the communities above its reservoir. The general type of treatment was determined by a court decision instituted by the water supply companies below the plant site.

Treatment includes Settling Tanks, Contact Beds, Sand Filters and Chlorination. The Settling Tanks may be completely drained to separate sludge digestion tanks. Sludge is discharged by gravity to sludge drying beds, enclosed in a Lord & Burnham Glass-Over.

The controlling factor in the design was the adaptation of the plant to a spot of natural beauty and elimination of any possible cause for complaint. The sewage is entirely covered until it passes on to the sand filters after treatment in the contact beds. All gas evolved from the digestion of sludge is collected and will be utilized for heating the sludge or heating the sludge drying beds in winter.

The plant has a rated capacity sufficient to care for 20,000 people, but the units have capacities which will allow considerably greater rates.

Incidental features of the plant are aeration following the settling tanks, as well as aerating manholes on the trunk sewer; a sand washer for cleaning the filter media; special means for handling the displaced liquid from the sludge digestion tanks; and a storage area for dried sludge to prevent any possible seepage reaching the stream. All drainage from the sludge beds is chlorinated.

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always effective without regard to the position of the airplane in flight. In the actual flight tests, the Tanager has been landed repeatedly from a height of 200 feet by adjusting the stabilizer and pulling the control stick all the way back, allowing the ship to land itself. With the controls in this position, the Tanager settles into a landing attitude and lands itself with no greater shock to the occupants than would accompany a normal landing. An attempt to make such a landing with the conventional airplane would inevitably result in complete loss of the ship, with probably fatal results to the occupants. In other respects, the Tanager has the performance of a conventional airplane with a high speed of 110 miles per hour, although the landing speed of 35 miles per hour is considerably less than generally accompanies this high speed. It seems safe to say (without regard to the merits of the other entries in this competition) that the Curtiss Tanager alone fully justifies the entire competition.

Newark Airport Income

RETURNS for the first year of operation of the Newark airport were recently made public in the metropolitan newspapers. According to the annual report of Peter J. O'Toole, supervisor of the airport, the city of Newark netted slightly over $8,000 during this first year of operation, the expenses amounting to $37,000 while the receipts totaled $45,015.03. The division of income was given as follows:

Leases of land	$ 6,626.62
Passenger flights	1,243.00
Hangar storage	14,470.17
Sightseeing flights	7,630.30
Automobile parking	3,473.75
Air mail	3,277.78
Ground rental	225.00
Sale of gasoline and oil	3,710.78
Student instruction	2,600.00
Miscellaneous receipts	1,757.13

As will be noted, storage of visiting airplanes in municipal hangars provided the largest single source of income. These storage fees were based on the size of the airplanes and ranged from $35 to $150 per month. The income from passenger flights represents the percentage collected by the municipality from the private operators. The city itself does not encourage any flying operations. The rate charged to operators is $1 per passenger from transport route operators and 10 per cent of the gross receipts from sightseeing, "hopping" and similar local flying. The Newark Air Service is the only tenant authorized to operate a school, and pays 10 per cent of its gross receipts from school operations in return for the privilege. The basis of charges to air mail operators is a fee of 1 cent per pound of mail flown to and from the airport, this arrangement being effected with the National Air Transport, Colonial Airways and Pitcairn Aviation. Revenue from gasoline and oil is based on a net fee of 2 cents per gallon on gasoline and 5 to 8 cents per gallon on oil. Automobile parking is charged for only on Sundays and then at the rate of 25 cents per day. At the moment of writing, complete details on the division of expenditures are not at hand, but it is presumed that these include only direct operating expenses, exclusive of any return on the investment in property outside of actual construction. Nevertheless, it is very encouraging to know that the city of Newark within this short period should have found it possible to build up its revenue to a point where a surplus over direct charges is already accruing.

Boston Municipal Airport

ONE of Mayor Nichols' final acts was to officiate at the dedication of the new memorial administration building at the Boston airport, East Boston, Mass., on Monday, December 30. The East Boston airport development was started several years ago, and a gradually increasing area of 242 acres of mud flats has been reclaimed, until today the airport covers a substantial area with a capital investment of around 7½ million dollars.

Work on the administration building was started early last June under an appropriation made by the City Council about a month previously. This building contains a general waiting-room about 42 feet long and 25 feet wide, with an exit to the flying field. Adjacent to the waiting-room is a general lunch room intended to accommodate over 50 persons, the tables being arranged to face the flying field, and a "quick lunch" counter for pilots and mechanics is also provided. This lunch counter can be reached by a separate entrance on the side of the building, making it unnecessary for pilots and mechanics in overalls to pass through the groups of passengers. Provision is made for telegraph room, press room, switchboard and information desk. There will also be a newsstand and a ticket office adjacent to the general waiting-room.

On the ground floor, the post office work room, emergency hospital and offices for Federal health and immigration officials, pilots' conference room, etc., will be included. On the second floor are the airport manager's room, meteorologist's room, communications room, offices for the Federal and state inspectors of aviation, private suite for visiting women pilots, bedroom and baths for visiting men pilots, and a room for the physical examination of pilots. Over the manager's room will be the control tower, which commands a complete view of the field and the fronts of all hangars. This building is designed as a memorial to the New England pilots who lost their lives during the World War.

Experimental Runway Construction at St. Louis

A paper presented at the recent Eighth Annual Asphalt Paving Conference, by Mark R. Thompson, Board of Public Service, St. Louis, Mo., describes the experimental runway construction being carried out by the St. Louis municipal airport. This paper outlines the experiments on airport paving which are being conducted by the city. The surface soil of the St. Louis airport is a heavy silt loam ranging from black to very dark brown and about 12 to 18 inches deep. It is well supplied with organic matter and when dry is easy to work, but very sticky when wet. The greatest need was found to be drainage. A complete drainage system was installed over the entire field, and after the paving of each runway an 8-foot ditch was dug on each side and parallel to the runway. Tile, varying from 8 to 20 inches, was placed for proper drainage, and then the trenches were filled with stone graded between 1 and 2 inches. The paper gives a complete description of the construction method used, the quantities of materials required, and the equipment utilized in preparing the runways. City engineers interested in problems of this type will find this paper of considerable help.

Planning the Airport

Under the above heading, B. Russell Shaw, airport constructor, of St. Louis, writes in the *National Real Estate Journal* of December 23, 1929, on the factors determining proper layout, drainage, clearance, grading, surface lighting and construction of airports, based upon his experience with some well-known fields. While this article naturally covers a number of points on which Mr. Shaw and others have previously written, the table of costs for different projects (which he gives at the close of the article) will be found of particular interest to municipal engineers. Naturally, tables of this kind cannot be applied directly to any one project. At the same time, they serve a very useful purpose in giving some indication of the items which must be considered in planning the construction of an airport. Mr. Shaw stresses the importance of considering revenue when planning the airport so that this consideration is not overlooked until work has been advanced to the stage where it is too late to make changes.

Traffic Planning for the Motor Age

To the Editor of THE AMERICAN CITY:

In accordance with what appears to be the established policy of your very worthwhile magazine, you published in the January issue (page 158) an exceedingly interesting illustration and accompanying description from the designs and pen of Fritz Malcher for a scheme of so planning arterial highways as to meet modern needs, by making it possible for vehicles to proceed without stopping from origin to destination through, around and between communities.

In line with the contribution which I, myself, made to the *New York Times* early this month, it seems to me that this device constitutes the next great step in traffic planning. Its advantages should be brought to the attention, as widely as possible, of all officials and citizens who are interested in the solution of this acute problem.

ERNEST P. GOODRICH,
Consulting Engineer.

New York.

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THE TAXPAYER'S DOLLAR

A Monthly Department of Budgeting, Assessment, Taxation, Accounting and Other Phases of Municipal Finance
Conducted by A. E. BUCK, National Institute of Public Administration, New York

Chicago's Present Financial Difficulties Analyzed

JOHN O. REES, Director of the Joint Commission on Real Estate Valuation of Chicago, has recently issued a notable report entitled "A Study of the Present Financial Difficulties of Local Governments and Their Causes." This is really the third report gotten out by the Commission under the direction of Mr. Rees. It is the direct result of an extensive survey of real estate valuation in Cook County, which was started early in 1927. Mr. Rees discusses the background of this survey and what the Commission has accomplished by way of reassessment, in the November issue of the *National Municipal Review*, under the caption, "The Reassessment of Real Estate in Cook County—A Bloodless Revolution."

The latest report reiterates some of the things contained in the earlier reports, namely, that one of the underlying obstacles to sound financing of the local governments in Chicago is to be found in the impossible assessment and reviewing organization and administration, and that any plan to relieve the present financial distress in these governments must include a reorganization of the functions now administered by the Board of Assessors and the Board of Review. This report, however, goes further; it discusses in an illuminating way the cause-and-effect relation between faulty assessments and faulty financing.

Chapter I of the report presents a concise statement of the methods of financing the local governments in Cook County, showing that they are relatively complicated and understood by few public officials, to say nothing of the taxpayers. Chapter II takes up the financial condition of the major funds of the city of Chicago, of Cook County, and of the Board of Education. Large deficits were anticipated in all funds at the close of the last calendar year. Chapter IV points out the difficulties involved in financial planning under the present system. For example, under this system the floating debt has reached an amount in excess of $135,000,000. This entails an unnecessarily high cost to the taxpayers in interest charges. Chapter IV sets up some requirements of a sound financial system for the local governments of Chicago. It points out that "the financial affairs of each fiscal year are hopelessly scrambled with those of both the preceding and following fiscal years"; that "appropriation ordinances and resolutions are based upon wishes rather than facts," having "little or no relation to the actual financial condition at the beginning of the period to which they apply." It proposes that there be a clear-cut separation of fiscal years in the matter of financial transactions; in other words, that each fiscal year be made to stand on its own bottom. It suggests that specific budgetary legislation be passed which will (1) "confine appropriations to responsibly estimated cash receipts from revenue"; (2) "confine the incurring of obligations to appropriations"; and (3) "confine the incurring of obligations to estimated cash receipts from revenue independently of the requirements that they be confined to appropriations." This last provision is quite significant from the standpoint of the execution of the budget. It has broad implications, pointing to the extension of executive authority.

The concluding chapter of the report, Chapter V, outlines what are regarded as the necessary steps to a sound financial system for the local governments of Chicago. It sums up the obstacles to be overcome, namely, the accumulation of floating, or unfunded, debt; the inconsistent, ineffective, incomplete set of laws governing financial administration; and the extremely uncertain assessment administration. It makes suggestions designed to change the basis of financing from one of "Spend it now and get it later" to one of "Get it first and spend it later." It proposes the funding of floating debts, the passage of legislation to install a real budget system, and the simplification of the local assessment organization and administration.

Noteworthy Assessing and Tax-Billing Procedure in a Small Town

A NOTEWORTHY procedure for making up the assessment roll and billing the taxes has recently been developed in the town of Harrison, N. Y., by Hubert W. Stone. Mr. Stone is Research Secretary of the Finance Committee of the town government, an unofficial body of citizens designated by the Town Supervisor, the present Chairman being Carl H. Pforzheimer, a prominent financier. We believe that officials of other town governments in New York, particularly those in the metropolitan area, will profit by studying the details of the Harrison procedure with a view to adapting it to their needs. With this in mind, we present below an outline of this procedure as written by Mr. Stone.

"The town of Harrison has an area of 19 square miles, which is divided into 12,000 parcels. To list this property in the assessment roll with the name of the owner, block and lot number, character of improvements and valuation; to extend the general town, special district, state, county and school taxes against each plot; to mail tax bills to the owners twice a year, is a task sufficiently large to warrant the use of all possible labor-saving mechanical devices. The equipment now employed in this work includes a billing machine of the flat base type and a standard make of calculator. An addressing machine has recently been added.

"There are three distinct steps in which these machines are used: (1) the compilation of the assessment roll in triplicate, which includes the listing of the names of the property owners, the designation of the plots, the character of improvements and the valuation; (2) the extension or computation of the general town, police, special district, state and county taxes; (3) the transcription of the amounts as extended in the roll to the tax bills, which bills are mailed to the property owners.

"1. A record card is kept of each piece of property, on which appears the area of the parcel, the unit price of the land with the various factors affecting its valuation, and the final valuation as determined by the assessor. It also contains a detailed description of the building and its value. These amounts are transcribed from the cards to the assessment roll by the billing machine. In order to comply with the provisions of the Westchester County tax law, the first process must be completed by June 1. Since it requires approximately two months, this work is begun early in April. To typewrite these data in by the billing machine has been a tedious task, although it permitted three copies to be made out at once, which was a marked improvement over the handwriting method formerly used. With the introduction of the addressing machine, however, on which there is a listing device, the sheets may be filled out at a great saving of time and effort. Only the valuations need be added by the billing machine. These must be repeated in five separate columns in order to show in which special district the property is located, so that the taxes may be extended. These entries are not completed until December.

"2. The next step is the computation of the several taxes. Twelve such computations are made for each piece of property. With the adoption of the general town and special district budgets early in January, this process can begin. It requires the use of the calculator and the billing machine. The amount of the tax is computed by the former, called off,

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is computed by the former, called off, can be proved by multiplying the total amount of valuation at the foot of the page by the rate and checking it with the columnar footing which has been accumulated by the billing machine. All of these entries are made in the 'work' copy of the assessment roll. The taxes over which the Town Board has control are extended by the end of February, when the Clerk of the Board of Supervisors determines the amount which must be raised for state and county purposes. After these taxes are extended, the third and last division of the work is begun.

"3. The last step, which must be completed by April 1, when these taxes are collectible, is largely copy work. The tax bills are designed to fit the columns of the assessment roll and they are filled out at the same time that the copy of the roll, which is delivered to the receiver of taxes, is made. Both the vertical and the horizontal totals are accumulated, which serve as a positive check on the mathematical accuracy of the computations. By making out the bills and the receiver's copy of the roll at the same time, the possibility of any discrepancies in the amounts is obviated.

"Heretofore typewriters have been employed to record the property designation and valuation on each bill and to address the envelopes. The addressing machine and the use of window envelopes reduce these time-consuming tasks to one relatively speedy operation.

"The extension of the school taxes is comparatively simple, since only one computation need be made. This is done during August, and the taxes are due and payable on September 1. The procedure is essentially like that described above.

"The use of this system of billing taxes in Harrison enables the work to be carried on by a clerical staff of only three persons."

Delinquent Taxes in Cuyahoga County, Ohio

MAYO FESLER, in *Greater Cleveland* for December 31, 1929, points out that the delinquent taxes in Cuyahoga County total $26,418,545. This, he asserts, is the highest percentage of any county in the state of Ohio. He discusses the situation, in part, as follows:

"Delinquent taxes in Cuyahoga County are piling up mountain high. They now amount to 30 per cent of the total taxes and assessments levied. They have been climbing steadily for more than ten years. Why? Because former county treasurers and prosecutors have failed to perform their duty. The laws have been sufficient—the enforcement has been inexcusably lax.

"A new County Treasurer, L. G. Collister, took office in September. He promised the people that tax delinquencies would be reduced. He is already grappling with the problem. The county has a vigorous County Prosecutor, Ray T. Miller, who has already instituted marked improvements in the collection process; but he has not been permitted to get hold of the large and more recent delinquencies.

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"The County Auditor, John A. Zangerle, gets the property on the tax duplicate; but the county treasurers have not followed through. The 1929 accumulated delinquencies consist of $19,635,756 unpaid taxes and assessments on real estate, and $6,782,789 taxes on personal property. The County Auditor estimates that about $2,000,000 of the accumulation of unpaid taxes is on public property (Bath Street tract, Public Library site, and lesser amounts elsewhere in the city and suburbs) which will never be collected. The remaining $17,500,000 delinquencies on real estate are considered collectible by the Auditor's office.

"The $6,782,789 delinquency on personal property has been accumulating for ten years. More than one-fourth of this, $1,376,076, represents the 1928 delinquency. Probably $5,000,000 of this total will be a total loss, because sufficient effort was not made promptly by former county treasurers to collect these taxes as soon as they became delinquent.

"There is, then, approximately $10,000,000 general taxes, $7,000,000 special assessments, and $2,000,000 personal property taxes, or a total of $19,000,000, which are regarded by the Auditor's office as collectible. In other words, here is a great reservoir of uncollected accounts which should have been collected by the county treasurers from year to year. If the collection is speeded up with vigor and determination in 1930, the city, county and other political subdivisions will have ample funds for operating purposes."

Cost of Government in Wayne County, Michigan

THE Board of County Auditors of Wayne County, Michigan, which surrounds Detroit, has made an interesting analysis of the cost of operating the government of that county for the past four years. This analysis is published as a booklet under the title of "Cost of County Government."

It is pointed out that the cost of the government of Wayne County has nearly doubled during the past four years. The expenditures in 1925-26 were $8,370,000, while in 1928-29 they were approximately $15,319,000. "The principal reason

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for this increase," says the Board of Auditors, "can be traced to the very definite paternalistic trend which government seems to be taking and to be an apparent trend of legislative bodies to require county governments to assume the entire expense of welfare work. The actual cost of administering the county government represents a comparatively small part of the budget. Such functions as public health, welfare, education, road construction and the various courts necessitate the greater part of the expenditure."

The report contains an illuminating analysis of the county's expenditures by activities during the period under consideration. Appended thereto is a list of explanatory schedules, showing actual expenditures and percentages of increase.

"The Tax Situation in Illinois"

THIS is the title of a bulletin by Herbert D. Simpson, recently issued by the Institute for Research in Land Economics and Public Utilities, located at Northwestern University, Chicago. Richard T. Ely, Director of the Institute, says in an introduction to the bulletin: "We, in Illinois, perhaps have the unenviable distinction of having the worst assessment of real property in the United States." He asserts that "it is used for political purposes," which leads to "gross inequalities"; furthermore, that he knows of no "other state in the Union in which the assessment of property is used as a means of gaining and retaining political control to the extent that it is in Illinois."

In preparing this bulletin, Dr. Simpson has made a detailed study of the assessment methods of four Illinois counties—Cook, La Salle, St. Clair, and Williamson. He has also collected certain facts with respect to assessments in the state as a whole. He analyzes these and points to the causes of present difficulties. He concludes by suggesting certain remedies, which lie in "the direction of centralization of administrative responsibility in both state and local assessment, full publicity of assessments, repeal of the quadrennial limitation, revision of the present personal property tax, and a moderate step in the direction of state income taxation."

Inequitable Assessments in Kansas City, Mo.

THE Kansas City Public Service Institute, in a recent issue of its weekly bulletin, *Public Affairs*, calls attention to the inequitable assessment of property in that city. It asserts that the city government is trying to apply antiquated assessment methods to modern conditions. After a study of the situation, it has found that various properties within the city were assessed at from less than 10 to over 100 per cent of the sale price. The average ratio of assessed value to sale price was 44 per cent. Over 600 properties were studied, 330 of which were assessed at more than 44 per cent and the remainder at less. The fluctuation was extremely wide, as indicated above, running over as much as ninety points in the percentage scale.

One explanation for the poor assessment methods in Kansas City appears to be that the city assessment system is under the control of county officials. The assessment of all properties within the county is made by the County Assessor, and the City Assessor merely copies the county real estate assessments which apply to properties within the city limits. But the County Court and the County Assessor, the Institute holds, have full power to adopt and establish a standard, uniform, scientific system of assessment. It therefore recommends a complete reappraisal, the installation of permanent records and methods, and the selection, training and payment of a competent staff to carry on the assessment work.

Summary of Final Action on New York City's Budget

CITY Comptroller Charles W. Berry has taken a commendable step by issuing for the first time, on December 31, 1929, a summary of the appropriations made for 1930 compared with those for 1929, classified in such a manner as to show clearly the increases or decreases. Some 3,700 separate appropriations have been brought together under 20 groups, which give, as Comptroller Berry says, "a graphic survey of the budget and the purposes of its appropriations which cannot readily be obtained from its thousands of separate appropriations." This summary, however, does not show, as is also the case with the original budget, the means of financing the appropriations. It would be greatly improved by showing such means, thus exhibiting a balanced relation between the anticipated income and the proposed outgo of the city government.

On the expenditure side, the summary shows that appropriations for personal services during the fiscal year beginning January 1, 1930, amount in round figures to $283,000,000 as compared with $260,000,000 for the preceding fiscal year. Appropriations for consumable supplies and for equipment for 1930 have been somewhat reduced over those for 1929, but debt service has gone up from $159,000,000 to $170,000,000. The increases in the aggregate are sufficient to raise the total appropriations for 1930 to $564,769,828.23, as compared with $538,928,697.14 for 1929. This amount for 1930, however, will not include all the expenditures which the city government will make, by several hundred thousand dollars. For instance, in a statement recently issued to the newspapers, Comptroller Berry declared that for the fiscal year ending December 31, 1929, the city government collected $628,790,000 and paid out $814,938,000, exclusive of the redemption of short-term bonds.

The summary of appropriations for 1930 shows that the city government will spend more than 30 per cent of the grand total for debt service, that it will spend over 18 per cent for educational purposes, nearly 15 per cent for the protection of persons and property (police and fire), over 11 per cent for health and sanitation, and almost 4 per cent for pensions and relief. This leaves approximately 22 per cent for all other city activities.

The Municipal Bond Market

By SANDERS SHANKS, JR., EDITOR, *The Bond Buyer*

THE advance in municipal bond prices during the last six weeks of 1929 was not accompanied by a similar movement in other classes of bonds. In fact, taxable bond price averages showed a slight decline for the month of December. That the municipal bond market has been able to hold firm at the new and much higher price level, in the face of a considerable increase in the volume of new financing, is suggestive of its sound foundation. Early in January municipal bonds came into sharp competition with several very large issues of high-grade corporation bonds, and this, together with the fact that state and city bonds were held at comparatively high prices, resulted in a noticeable reduction of activity in the municipal market.

In the huge over-subscription for $150,000,000 American Telephone & Telegraph Co. 35-year 5½ per cent debentures brought out during the third week of January, we had a striking demonstration of the strength of the market for high-grade bonds. That offering, comments a prominent investment house, will probably be written in financial history as the turning-point in the bond market and a revival of public interest in high-grade fixed-interest-bearing securities. Government, railroad and other corporation securities' prices are now gradually moving higher, as investors' confidence in bonds increases and in response to easier money rates. The transfer of funds from short-term to long-term obligations continues at an accelerated pace, clearly indicating confidence in the long-term outlook for bonds.

The following table, giving the details of recent sales of new issues, will indicate the current level of municipal bond prices:

Amount	Municipality	Rate (%)	Maturity	Net Basis (%)
$ 700,000	Erie, Pa.	4½	15½-yr. (avg.)	4.24
200,000	Cedar Rapids, Iowa	4½	12-yr. (avg.)	4.43
128,741	Auburn, N. Y.	4½	5½-yr. (avg.)	4.43
1,500,000	United States (Philippine Islands)	4½	29 2/3-yr.	4.47
500,000	King Co., Wash.	4½	16-yr. (avg.)	4.49
1,507,000	Akron, Ohio	4½ & 4¾	13¾-yr. (avg.)	4.52
291,000	West Orange, N. J.	4¾	15 1/3-yr. (avg.)	4.59
1,656,000	Hamilton Co., Tenn.	4¾	30-yr.	4.70
80,000	Los Angeles Co., Calif.	5	5-20-yr. (ser.)	4.76
78,000	Boise, Idaho	5	9½-19½-yr. (opt.)	4.85
2,000,000	State of Arizona	5	5 1/3 months	4.99

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Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

ZONING and PLANNING NOTES

From Data collected by the Zoning Committee of New York (233 Broadway)

Recent Zoning Laws and Ordinances

UNION TOWNSHIP, NEW JERSEY.—Ordinance, December 10, 1929.

PENNSYLVANIA.—Statute, 1929, No. 231, amending zoning law with relation to boroughs and townships of the first class.

EL PASO, TEXAS.—Ordinance, December 26, 1929.

Undertaking Establishment a Nuisance —Injunction

KANSAS.—Hatcher v. Hitchcock, 281 Pac. 868.—An undertaking establishment in a residential district of a city may be a nuisance to the people living in the immediate vicinity, and enjoined in consequence. *Leland v. Turner*, 280 Pac. 1061 (Kansas) and cases there cited, followed.

Such an establishment in close proximity to a pre-established hospital may have so depressing an effect upon the sick and diseased inmates that injunction may properly be invoked for its prevention or abatement.

Non-Conforming Use

NEW JERSEY.—*Cannady v. Town of Montclair*, 147 Atl. 737.—In a prosecution for violating a city ordinance by conducting a car-washing and garage business in a building located in a zoning district where this was forbidden, where the accused introduced evidence showing continuous use from a time prior to the adoption of the ordinance until the time of its alleged offense, the rejection of proof of use subsequent to the adoption of the ordinance was error, as a use that had been actually and lawfully instituted before the adoption of the ordinance and had been constantly maintained, was entitled under P. L. 1928, p. 696, to be continued.

Storage of Lumber

NEW JERSEY.—*Durkin Lumber Co. v. Fitzsimmons*, 147 Atl. 555.—The storage by a lumber company of lumber on a parcel of land is "conducting business" on that land within the meaning of the zoning ordinance of the town of Belleville.

Garages—Distance from Church

NEW JERSEY.—Freeman v. Hague, 147 Atl. 553.—Under a zoning ordinance prohibiting the erection of buildings other than residences within 150 feet of a church, the ownership by a church of vacant land within that distance does not prevent such structure from being erected within 150 feet of such land.

Home Rule—Substance of Ordinance

NEW JERSEY.—*Grantwood Lumber Co. v. Schweitzer*, 147 Atl. 741.—Where a zoning ordinance passed pursuant to Laws 1920, p. 455, Sec. 1, was amended on the date of its passage so as to change part of the area of the borough from a business to a one-family dwelling district, the ordinance was not legally adopted, because the change restricting additional areas was a change in essence or substance of the ordinance, and the Home Rule Act (Laws 1917, p. 345, Art. 10, Sec. 1, Amended, Laws 1918, Ch. 163, p. 478) requiring that no ordinance be finally passed unless it has been read in substantially final form at a meeting held at least one week prior to its final passage, was not complied with.

First Case in Highest State Court on the Recent New York Laws for the Adoption of Official Maps

The decision of the New York State Court of Appeals in the case of the village of Lynbrook against George J. Cadoo et al., handed down December 3, 1929, upholds the reasonableness and propriety of the various enabling acts for the planning of cities, towns, and villages in so far as these acts require the approval of a planning board before a plat may be filed with the County Clerk.

The decision of the Court stated that it was not called upon to pass on the details of these laws, but it included the following opinion:

"Town planning is a new field of legislation, comparable with the recent development of zoning laws and regulations. Its purpose is to preserve through a governmental agency a uniform and harmonious development of the growth of a village and to prevent the individual owner from laying out streets according to his own sweet will without official approval."

The Court held that although the village of Lynbrook had not adopted an official map since the enactment of the statute and consequently had filed no certificate to that effect with the County Clerk, such inaction on the part of the village should not result in defeating the purpose of the law with regard to filing non-official maps.

The Court therefore ordered the County Clerk to remove from and cancel of record a map filed by the respondent without the approval of the Planning Board.

The Lynbrook decision, planners agree, is extremely helpful, and like the oft-quoted Wulfson and Lincoln Trust zoning cases, will establish a precedent for subsequent court rulings.

—*Regional Plan News*, January, 1930.

Boards of Adjustment in New Jersey

NEW JERSEY.—*Pennington Courts, Inc., v. Board of Adjustment of City of Passaic*, 147 Atl. 732.—Under the New Jersey Zoning Law, a board of adjustment is empowered itself to grant a variance in specific cases of practical difficulty or unnecessary hardship where the structure in question is not more than 150 feet beyond the boundary line of the district in which, by the zoning ordinance, such structure or use is permitted; and in certain other cases is authorized to recommend to the legislative body of the municipality that an appropriate change be authorized by that body.

Held, that where such structure is not more than 150 feet beyond such boundary line, authority to act is in the Board of Adjustment, and a recommendation to the municipal legislative body and action by them on that recommendation are nugatory and will be set aside.

Board of Appeal—Abuse of Discretion

NEW YORK.—In re *Bator Realty Corporation*, Supreme Court, Bronx County, reported in *New York Law Journal*, December 17, 1929.—Facts set forth at length showing that the action of the board in this case was an abuse of its discretion, and that action set aside.

Residence District

NEW YORK.—*Dowsey v. Village of Kensington*, Supreme Court, Nassau County, November 19, 1929.—The provision of a zoning ordinance establishing as a residential district from which business and apartments (as well as industry) were excluded, a locality already restricted by private agreement and of a high class, are valid.

Plotting

NEW YORK.—*Village of Lynbrook v. Cadoo*, 252 N. Y. 308.—Laws 1926, ch. 719, with regard to the establishment of an official map, provides that to be entitled to record, plats of subdivisions of land showing new streets or highways shall be approved by the local planning board. The defendant had filed such a map and it was recorded without such approval. The plaintiff village in this action seeks to cancel this record. It has not adopted an official map, or given notice thereof to the County Clerk as provided in the

NOTE BY EDITOR.—This is the first case in the highest state court on the recent laws with regard to the establishment of a city or village map in New York. Further comment on it from the *Regional Plan News* will be found in another column.

An excellent exposition of these New York laws with a statement of their progress to date was made recently by George B. Ford in an article before the New Jersey State League of Municipalities at its convention in Atlantic City last September. The address is published in full in the Proceedings.

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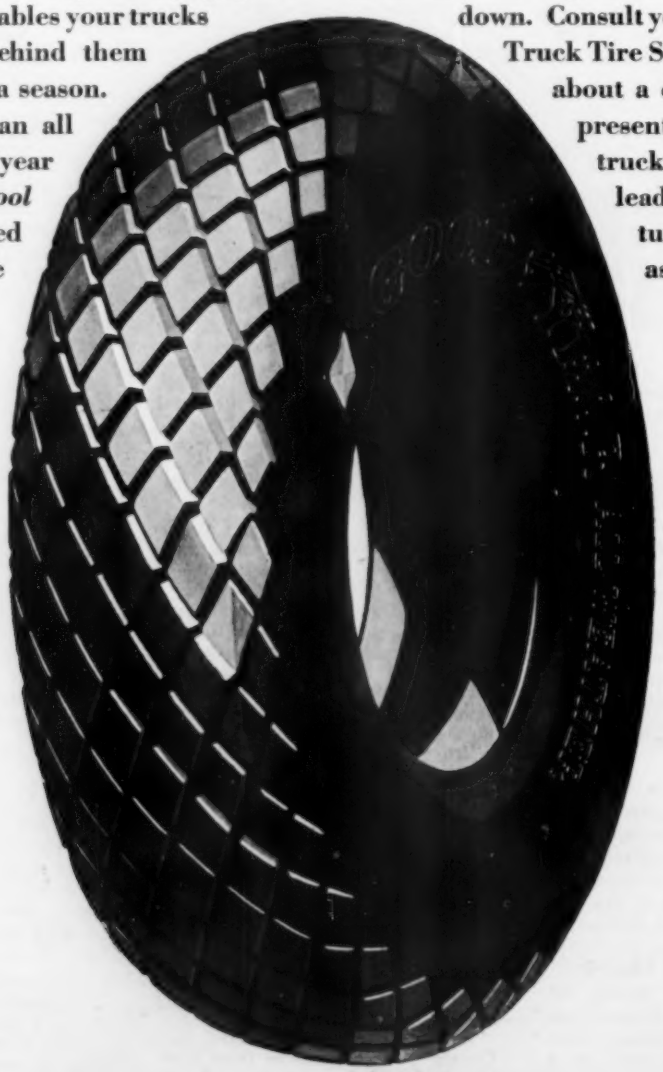

GOODYEAR

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During February we hope you will remember to mention THE AMERICAN CITY.

1926 law. *Held*, that nevertheless the map should be canceled as the village requests; inaction on the part of the village in adopting an official map should not result in defeating the purpose of the law that unapproved plots shall not be recorded.

Planning in Pennsylvania

"Planning Whys and Otherwise" is the title of a late bulletin of the Pennsylvania Association of Planning Commissions reporting the discussions at its annual conference in Williamsport, Pa., last February. Among other things, it contains many illustrations of the working of boards of zoning appeal in that state.

New York City Zoning Resolution

The New York Title and Mortgage Co. has issued in its second edition a most useful book of some 60 pages on its New York Zoning Resolution, by George B. Ford, who was the city planning consultant to the Commission which zoned the city in 1916. It contains the text of the resolution with notes by Mr. Ford, illustrative diagrams, official map, designations, the rules of procedure of the Board of Standards and Appeals, forms for applications, etc., to the Board, typical variations and conditions imposed by the Board, being excerpts from its proceedings, and the zone maps, with amendments to June 6, 1929.

Economics of Zoning in California

The National Association of Real Estate Boards, of 310 South Michigan Avenue, Chicago, has published a pamphlet by W. L. Pollard, of Los Angeles, on the "Economic Effects of Zoning a City."

Zoning Progress

The American Bar Association Bulletin for September, 1929, contains an excellent article by Joseph P. Chamberlain, Director of the Legislative Drafting Bureau of Columbia University, New York, on "Zoning Progress."

Two Graphically Presented Arguments for Adapting Subdivisions to Topography

Illustrations from Monograph 3, Vol. 7, Regional Plan of New York and Its Environs

MISFIT STREETS OF ADJOINING SUBDIVISIONS, TRACED FROM A MAP OF YONKERS, N. Y.

FAILURE to adapt street layout to the contour of the land is emphasized as one of the most common shortcomings in subdivision practice, in a report on the Planning and Subdivision of Land, issued recently by the Regional Plan of New York and Its Environs.

In very many instances, the report states, straight streets laid out at right angles to each other are used, regardless of the topographical difficulties. When the topography is steep or rugged, a rigid adherence to the rectangular system inevitably results in unnecessarily steep grades or heavy excavation costs. A development of this very character, situated in the town of Mt. Pleasant, N. Y., is pictured in the accompanying photograph. During 1928, two of the platted streets were improved, and in doing that work it was necessary to resort to grades of 16 per cent.

Another evil which the report stresses as resulting from too general application of the rectangular plan, is the failure of the street systems of adjoining subdivisions to match. In order to make the most of his land with a minimum of trouble, the owner frequently plats his streets parallel to the boundaries of his property, it is stated. The result of two owners' developing their respective lands in this manner, is illustrated in the accompanying map, which depicts an actual instance of that sort in Yonkers. Commenting further on such horrible examples of street layout, the report says:

"Primarily, misfits are due to lack of a community plan and of the control of planning by the municipal authority. Secondarily, they are due to misplanning by the owners, and to their failure to cooperate with each other in determining their street layouts. The plats are filed separately, and frequently the one is determined before the other has been staked out, so that the mistake could be avoided in no other way than by conference between the owners. It occasionally happens that a misfit is platted intentionally, after the first subdivision has been built up, in order to preserve for the second subdivision, by isolation, a higher class of residential development than obtained in the first.

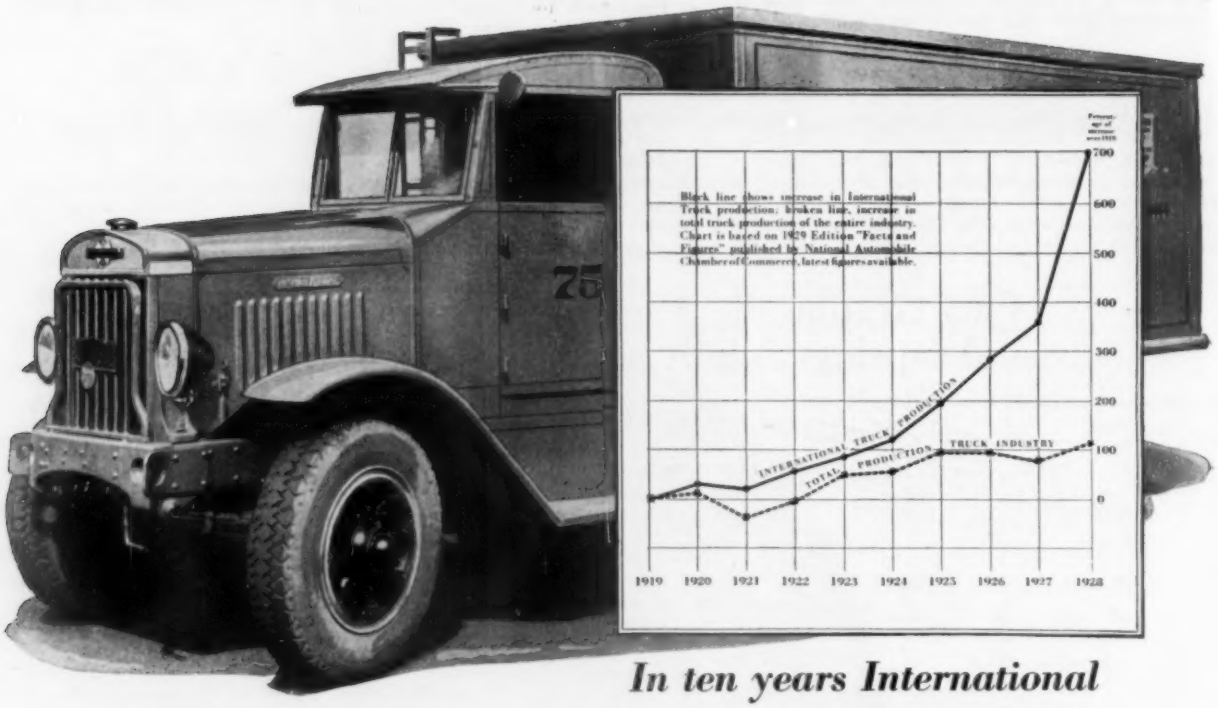
"Whatever may have been the cause of the misfit, the community is often put to great expense in later years in correcting jogs at street intersections and in extending dead-end streets. Even when this is done, the map of the community will be patterned in small patches of rectangular street systems with widely varying orientations. The costly removal of misfits can palliate, but never overcome, the essential faultiness of the original platting."

That such shortcomings and evils as are here described are beginning to be recognized in different parts of the country, and that steps are being taken to forestall their repetition, we have proof in the form of published subdivision platting regulations drafted by city planning commissions and officially adopted by municipalities. On page 115 of this issue are shown two illustrations from the recently published regulations in Cincinnati, Ohio, showing right and wrong ways of developing lots with uneven frontage.

STEEP GRADES RESULTING FROM RIGID ADHERENCE TO A RECTANGULAR PLAN

Streets laid out to conform with the topography avoid such distorted views of the house fronts as those shown above

Fast-Growing Popularity


Black line shows increase in International Truck production; broken line, increase in total truck production of the entire industry. Chart is based on 1929 Edition "Facts and Figures" published by National Automobile Chamber of Commerce, latest figures available.
INTERNATIONAL TRUCK PRODUCTION
TOTAL TRUCK INDUSTRY PRODUCTION
700
600
500
400
300
200
100
0
1919 1920 1921 1922 1923 1924 1925 1926 1927 1928

In ten years International Truck production has increased Seven-Fold, while the total truck production of the industry has only doubled.

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This comparison, indicating the growing preference for Internationals, is offered in no vainglorious spirit but simply as a matter of public record.

Please remember, too, that back of International Trucks stands more than a quarter of a century of automotive achievement and 99 years of experience in general engineering and manufacture.

May we add that what Internationals have been doing for others year after year they may rightfully be expected to do for you.

There is an International Truck to meet your particular requirements. We suggest that you ask the nearest International Branch or dealer to show it to you. There is no obligation.

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THE CITY'S LEGAL RIGHTS AND DUTIES

Conducted by A. L. H. STREET, Attorney at Law

Statute Permitting Exemption from Taxation Upheld — Attack Upon Proposed Rescission of Exemption Was Premature.—A manufacturing plant in Vermont was partly destroyed by flood, and the owner contemplated rebuilding at the old location. The town voted to exempt the property from taxation for five years. But within that time steps were taken toward a town meeting to vote on a proposal to rescind the exemption. The manufacturing company sued to enjoin the holding of this meeting.

In the case of Rixford Manufacturing Co. vs. Town of Highgate, 144 Atl. 680, the Vermont Supreme Court decided that injunction would not lie. The decision was grounded on the general rule that a court will not enjoin the adoption of an ordinance or resolution though the same would be unauthorized or void on its face. In other words, the proper method of attacking the measure is to await its adoption and then sue to enjoin its enforcement, if enforcement be attempted.

The following language of the opinion shows the attitude of the Court on the subject of the validity of such tax exemption.

"The constitutionality of the statute which is now section 689, G. L., empowering a town to vote certain exemptions from taxation, is well established. . . . An exemption of this class, regularly granted and accepted, and supported by a consideration, is a binding contract. . . . It is not within the power of the town thereafter, and within the term of the exemption, to rescind the resolution and withdraw the exemption, to the prejudice of one who has accepted the offer specifically made therein."

Use of Highways Not Limited to Traveled Portions.—Two late court decisions—one by the Massachusetts Supreme Judicial Court and one by the Court of Appeals in Cleveland—deal with legal aspects of portions of streets and highways laid out but not commonly used.

In the case of Vye vs. City of Medford, 165 N. E. 34, the Massachusetts Supreme Judicial Court reviewed a controversy concerning a boundary of a street. Deciding a question of title in favor of the city, the Court made these general observations:

"The rights of the public in the whole width of the way as located and laid out were not lost by using less than the whole width of the traveled way. . . . Compensation to landowners is based on the whole width taken, even though a part only is constructed for travel. . . . The use of a part of the land taken for an embankment to support the traveled way is a use of the land for a highway purpose. . . . A municipality is under an obligation to maintain railings where steep banks or dangerous declivities exist so near the traveled road as to expose traveling thereon to injury."

The Ohio case (Stuart vs. Board of Commissioners of Cuyahoga County, 165 N. E. 53), involved statutory liability of the county for injury to the driver of a horse-drawn vehicle, due to driving into a hole alongside the traveled part of a road, where there was an offset in the traveled portion, so that plaintiff by pursuing a straight course along the wider portion of the traveled way naturally drove into the defect. The Court of Appeals remarked:

"Simply because the road was improved for a portion of its width is no reason for barring the public with vehicles from using the unimproved part of the road. . . . This conclusion would be bereft of all logic, because there is nothing in the statute which bars the public from the use of the highway itself to the full limit of its legal width, especially if it becomes necessary by reason of any fact or circumstance to leave the improved portion of the highway. The improvement of a portion of the highway does not vacate the balance of the road, and the construction of the improvement is no abandonment of the unimproved portion of the road by the Board of County Commissioners, and neither is the improvement any notice or warning to the public that the unimproved portion of the highway, if fit for travel, cannot be used for that purpose."

Indexes to Legal Decisions

The items appearing in this Department each month are classified by subjects in THE MUNICIPAL INDEX. The 1928 edition of the INDEX, on pages 110 to 115, covers the legal items published during 1924 to 1927 inclusive; and pages 94 to 97 of the 1929 INDEX list the items for 1928. The 1929 items will be similarly indexed in the 1930 MUNICIPAL INDEX, now in preparation.

General Taxpayers Denied the Right to Enjoin County Authorities from Improving a Highway Out of Gasoline and Automobile Tax Revenues.—If taxpayers' burdens would not be thereby increased, and if no illegal tax was proposed to be assessed against them, they had no standing to enjoin county authorities from improving a highway out of funds derived from taxation on gasoline sales and automobiles. (Young vs. Board of Commissioners, 273 Pac. 398, decided by the Kansas Supreme Court.)

Abutter Held Entitled to Enjoin Obstruction of Access to His Property by Street Railway Tracks.—Defendant electric railway, in constructing loop tracks in front of plaintiff's property, did so in such manner as to prevent parking of automobiles in front of his property and otherwise interfered with access to and from the premises. No offer to compensate him for interference with his property rights was made. Under these circumstances, the California District Court of Appeal decided that he was entitled to an injunction. The Court makes the following quotation from other legal authorities as supporting the conclusion reached:

"An abutting owner has two kinds of rights in a highway, a public right which he enjoys in common with all other citizens and certain private rights which arise from his ownership of property contiguous to the highway, and which are not common to the public generally; and this regardless of whether the fee of the highway is in him or not. . . . An abutting landowner on a public highway has a special right of easement and user in the public road for access purposes, and this is a property right which cannot be damaged or taken away from him without due compensation." (Lane vs. San Diego Electric Railway Co., 273 Pac. 833.)

Ordinance Regulating Routes and Stopping of Interstate Busses Upheld.—The power of cities to regulate the use of streets by busses, interstate and intrastate, was thoroughly considered by the New Jersey Supreme Court in the case of People's Rapid Transit Co. vs. Atlantic City, 144 Atl. 630. The opinion upholds an ordinance of defendant city, restricting the use of streets by motorbusses and permitting loading and unloading of busses at terminals only, etc. The measure was declared to be valid as against interstate, as well as intrastate busses. Said the Court, in part:

"It is well settled in this state that the regulation of motor vehicles on particular streets, even to their complete exclusion therefrom, when deemed necessary in the public interest, is within the police power delegated to municipalities. . . . And, while such regulation may be considered drastic in its operation, the Court is not at liberty to substitute its judgment for that of the municipality as to the best methods of relieving traffic congestion in the specific area, in the interest of the welfare of the inhabitants and frequenters of the city. Such a regulation bears a direct relationship to the public safety, and we do not find in this instance, and under the circumstances of this case, that the prescribed municipal action is either unreasonable or arbitrary in its provisions

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or general tendency, or that it militates against the public policy necessarily conceded to the municipality for the preservation of the general public welfare. . . .

"Following this general line of legal adjudication, it has been settled in the United States Supreme Court that reasonable police regulations by a state or municipality, applicable to interstate motorbus traffic, are valid, and will not constitute a direct or undue burden on interstate commerce. . . .

"If a power of regulation of this character were not to be accorded to the municipality, it would be difficult to apprehend by what modus operandi intelligently exercised the public safety could be properly conserved; and, within reasonable limitations in its exercise, such a power has generally been conceded to all municipalities."

Order of Board of Health Forbidding Cemeteries on Watershed Not Conclusive as Against a Cemetery Shown to Constitute No Menace to Public Health.—An order of the Board of Health for Buncombe County, N. C., forbidding the establishment of cemeteries on a watershed near Asheville, on the ground that the public health would be impaired, was held unenforceable against a cemetery shown to constitute no menace to the public health. The high spots of the opinion of the North Carolina Supreme Court in this case (Board of Health vs. Lewis, 146 S. E., 592) read as follows:

"A cemetery, in which the dead have been and will be buried, is not a nuisance per se" [inherently], but "it may be shown that a particular cemetery, by reason of facts and circumstances affecting it, is a nuisance, and, upon such showing, an injunction will be decreed, permanently enjoining and restraining the burial of dead bodies in such cemetery."

But the Board of Health contended that its finding that a nuisance would result was conclusive. Overruling this argument, the Court said:

"The principle that a statute, enacted by the General Assembly, in the exercise of the police power of the state, to protect the public health, cannot be challenged by an allegation that the use of private property prohibited by the statute does not in fact endanger the health of the public, is not decisive of the contention. . . .

"There is manifestly, we think, a distinction between a statute enacted by the General Assembly, and a rule, regulation, or ordinance made or adopted by a county board of health, under a statutory authority. The General Assembly has the power and authority to enact statutes, subject only to constitutional limitations; whereas a board of health has only such power to make rules and regulations and to adopt ordinances as has been conferred upon it by statute. . . . When the validity of a rule or regulation made by a board of health is challenged upon the ground that the facts found by the board as justification for the same are not true, the finding is not necessarily conclusive. One whose rights of person or property are injuriously affected by the rule or regulation will be heard by the courts upon his allegation that the facts are other than as found by the board."

Property Not Assessable for Sewer When Connection Impractical or Adequate Connection Already Existing—Statute Did Not Limit Time for Reviewing Unconstitutional Assessment.—An assessment of property for a township sewer was vacated in the case of Beattie Manufacturing Co. vs. Little Falls Township, 144 Atl. 634, on the ground of lack of benefits. And it was held that a delay in securing issuance of a writ of certiorari to review the assessment was not fatal. The text of the opinion on these points is as follows:

"The sewer is laid under the sidewalk on the opposite side of Main Street, with the state highway intervening; it is either impossible or impracticable to make sewer connections across Main Street. The practical way to connect the property with the sewer, if such connection is ever desired, is by laying a sewer on the side of the street next to the mill property, at such time as the facilities may be needed.

"The sewage from the lot assessed has been already taken care of by a connection with the pre-existing sewer at the corner of Main Street and Union Avenue, and there is no enhancement in the market value of the prosecutor's property by the construction of the sewer, and there is no benefit to the prosecutor's property—derived from the sewer. . . .

"The only other point that calls for any discussion is that urged by the defendant, viz., that certiorari was allowed after 30 days . . . . from the date of the confirmation of such assessment or award, in violation of article 20, P. L. 1917, pp. 319, 370, as amended by P. L. 1921, p. 515, sec. 56. . . .

"But this statute, the cases all hold, does not apply where the assessment is in violation of constiutional rights. . . . This statutory limitation cannot be enforced for the protection of an assessment, which the Legislature could not constitutionally authorize; i.e., where there is no benefit conferred on the property assessed, as in the present case."

Negotiations Held Insufficient to Confer Franchise on Gas Company.—The case of Community Natural Gas Co. vs. Northern Texas Utilities Co., 13 S. W. 2d, 184, involved a controversy between rival claimants of gas franchise rights in the city of Vernon, Texas. Construing certain negotiations on which the rights of appellant, the Community Company, depended, the Texas Court of Civil Appeals at Amarillo decided that they were insufficient to confer a franchise. Outstanding points by the Court follow:

"No franchise having been legally granted appellant, estoppel cannot be predicated upon preliminary proceedings to that end which never matured. Any expense incurred or work done by appellant prior to the ripening of its negotiations with the city into a contract was at its peril, because a party in dealing with the municipality is bound to know the extent of a city's powers. . . .

"Under article 2, sec. 17, of the city charter, the appellant could not begin using the streets in laying its pipes unless it had permission evidenced by a valid ordinance to do so. The resolution of July 27, 1926, permitting it to begin work upon the filing and approval of a bond for $25,000 was a nullity, even though the bond had been approved, and the record shows no such approval. A city has the right to grant a franchise with conditions annexed. . . .

"The G. M. Church franchise was granted upon conditions precedent. The grantee failed to comply with the conditions, resulting in a forfeiture, because of such failure. No action by the city to declare it forfeited was necessary. If no right vested, there was none to be forfeited by a suit, and its validity may be collaterally attacked because it is inoperative and void as a contract."

City in Sewer Improvement Project Could Divide City into Three Drainage Areas Assessable as a Single System.—Overruling an objection of property owners to a sewer improvement project, in the case of Lawson vs. City of Greenup, 13 S. W. 2d, 281, the Kentucky Court of Appeals said:

"Appellants also contend that the City Council was not authorized to divide the city into three drainage areas and then treat the entire system as one unit for the purpose of assessing the cost of its construction. . . . This was a matter within the discretion of the City Council, and there is nothing in the ordinance tending to show, nor any averment in the petition, that this discretion was abused. Whatever may have been the reason actuating the Board of Council to divide the city into three areas, there is nothing to indicate that the entire territory affected by the improvement is not equally benefited."

A Councilman's Possible Prospective Interest in an Improvement Contract Held Not to Vitiate Proceedings.—Proceedings for the establishment of a sanitary sewer system were not invalidated on account of any expectation on the part of one of the members of the Council that he might be enabled to sell the contractor materials to be used in the construction. (Hodge vs. City of Princeton, 13 S. W. 2d, 491.) On this point the Kentucky Court of Appeals said:

"It is not alleged that Taylor was in any way financially interested in the contract for the construction of the sewer system, or that he was induced to vote for the ordinance by a promise that any part of the sewer pipe, cement, or other building material would be purchased from him. Reduced to its final analysis, all that is alleged is that he voted for the passage of the ordinance with the expectation and fraudulent purpose of being able to sell the necessary materials to the expected contractor. All that this means is that he was influenced in his vote by the remote possibility of a sale to the unknown successful bidder. The allegation is not susceptible of proof. It involves a metaphysical inquiry that no one can answer. It is too vague, uncertain, indefinite, and nebulous to show any disqualifying interest on the part of Taylor."

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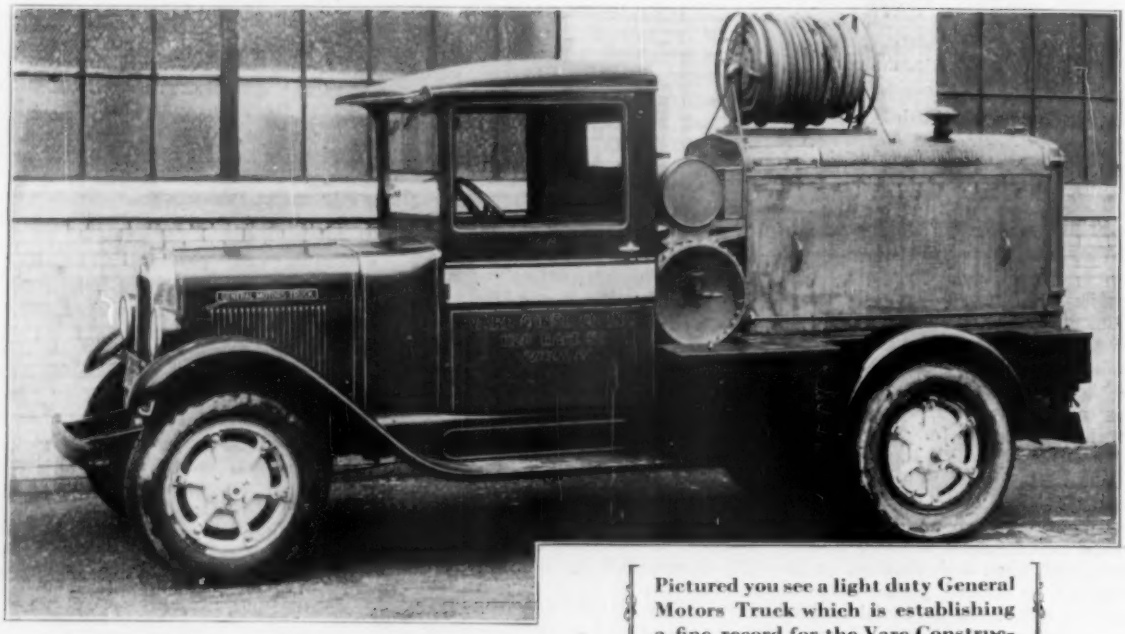

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Private Wharves May Be Maintained Without Municipal Consent—Temporary Lease of City's Riverfront Property to Waterways Company Sustained.—A lease of waterfront property on the Ohio River, by the city of Louisville to the Inland Waterways Co., for temporary use for wharf purposes, was sustained by the Kentucky Court of Appeals in the case of Inland Waterways Co. vs. City of Louisville, 13 S. W. 2d, 283. One of the grounds on which the lease was upheld was that the city reserved the right to resume possession of the property when needed for municipal use. It was further decided that the lease was not in the nature of a franchise in the sense of requiring preliminary advertisement and public sale of the same under local constitutional requirement. High spots of the opinion read:

"Wharves are not necessarily public. They may be private property, and may be operated by any riparian owner without a franchise. The owner of a private wharf has a right to its exclusive use and emoluments and to permit its enjoyment by such individuals as he may see proper. Whether a wharf or landing is public or private depends on a number of factors, separately or in combination, and the lease in question does not, by any of the tests, provide for a public wharf requiring a franchise as a prerequisite to its lawful operation. It is recognized by the cases that while a wharf built on land belonging to the public may have some of the elements of a public wharf, yet even when it is upon land leased from a public corporation, if it is operated as a private wharf, it takes the character of a private wharf. It is the nature of the business, not the title to the land, that fixes its status. It is the service that is rendered pursuant to an obligation, not the facilities employed, that determines the proper solution of the problem. . . .

"The proposed river terminal is not to be operated in competition with the municipal wharf or serve any purpose subserved by it. The object is to develop a type of desirable business not now existing, and which may be developed properly by a private person or corporation. Until the city takes it over and begins its operation as a public wharf, there is no reason apparent why the objects contemplated by the contract may not be accomplished. It is expected that boats and barges will be moored at the landings, and that appellant will provide cranes and hoisting devices for transferring the contents of such vessels to railroad cars on the shore, or to storage bins and warehouses; and that vessels may be likewise loaded for shipment. Such business is not now performed at the public wharf, and it is not known that it will be of sufficient volume or value to justify the city in making the expenditures necessary to embark in that branch of business. This consideration has induced the city to lease the land in order that such business may, if possible, be created and developed to profitable proportions. It must be remembered that the city reserves the right, as it is directed to do by statute, to terminate the lease at any time when the property may be required for municipal wharf purposes. In view of this situation and the plain purpose to be served, we see no room for the argument that the necessary operations under the contract involve the essential exercise of a franchise. . . .

"It is established in this state that a city may acquire lands in contemplation of reasonable necessity in the future and employ the powers of condemnation to that end. . . . And it is equally well settled that the city may lease the property temporarily until such time as it may be devoted to the use for which it was acquired. The city may plan and provide for the future within the limits of a reasonable discretion."

Ground Occupied Exclusively by Street Railroad Held Assessable for Paving—Property Onwers Held Not Estopped to Attack Re-assessment Proceedings.—The following is an abstract of the decision of the Oklahoma Supreme Court in the case of Oklahoma City vs. Eastland, 274 Pac. 651:

A tract of land about 33 feet in width along the center of a city boulevard occupied exclusively by a street railway company, held by voluntary deed of dedication from the private owners of the land for street railway purposes, and from which the public are excluded by means of a curb, is private property, and is a "lot, piece, or parcel" of land, fronting and abutting upon the boulevard, within the meaning of the Oklahoma Street Improvement Act, article 1, c. 10, Session Laws 1907-08, and subject to assessment for the cost of paving the boulevard, regardless of whether the title of the railway company amounts to an absolute fee.

Where the city carelessly and negligently permitted a decree of court to be entered and become final, enjoining it and the duly constituted authorities from levying and collecting the just and proper charge against the strip of land above described for paving the boulevard, the city cannot thereafter by reassessment impose upon the other abutting property owners the expense of improvement which was a legal charge against such strip of land.

In a proceeding to reassess the benefits of street improvements, the failure of abutting property owners to appear and protest in pursuance to notice given did not work an estoppel to object later, where the city was without authority of law to make the reassessment, and where the improvement was made and expense incurred long prior to the proceeding for reassessment.

An Ordinance Is Not Invalid Because Adopted in Violation of Pre-election Promises.—Proceedings for the establishment of a sanitary sewer system were not invalid because adopted by a vote of members of the City Council in violation of their pre-election pledges. (Hodge vs. City of Princeton, 13 S. W. 2d, 491). The reasoning of the Court of Appeals of Kentucky in this case is as follows:

"In the case under consideration it was necessary to obtain the assent of the voters to the enactment of the ordinance, and no election for that purpose was held. The Councilmen as a body took no official action that amounted to a contract with the people. All that is claimed is that, in voting for the ordinance in question, the members of the Council violated their pre-election promises. The powers of municipal officers are fixed by the Legislature within the limits prescribed by the constitution. These powers they have the right to exercise, and, so long as they do not act corruptly or in bad faith, the courts will not interfere with their actions. The corruption or bad faith that will subject their action to review is such as concerns, or is connected with, their official actions, and has nothing to do with their conduct or promises while mere candidates for office. It is apparent, therefore, that the validity of official action cannot be made to depend on the keeping of pre-election promises. To so hold would be to substitute for government by law government by estoppel, with all the. . . . chaos that would inevitably follow."

When Resolution Vetoed by Mayor His Subsequent Signature Upon Copy in Minute Book Does Not Give It Legislative value — Mandamus Not Proper When Confusion Will Be Caused.—Proceedings to compel defendant borough to enter into a contract to buy a fire engine were ordered dismissed in the case of Maxim Motor Co. vs. Borough of Palisades Park, 144 Atl. 818.

A resolution for purchase of the engine was adopted, but was vetoed by the Mayor. Two months later, however, he signed the resolution as copied into the minutes of the Borough Clerk, not the original resolution which he had returned to the Council with his veto. The New Jersey Supreme Court said:

"I do not undertake to say that the resolution may not be written in the minute book in the first instance and be handled in that form for presentation to the Mayor and action by him; but I do undertake to say that where, as in this case, the original resolution was written in the normal way on a sheet of paper, transferred to the Mayor, and, as shown by the minutes, returned by him without his approval, the signature of the Mayor . . . to the copy entered in the minute book, has no legislative value."

But it was attempted to support the resolution on the independent ground that it had been passed over the Mayor's veto. This attempt failed because it appeared that the resolution was not reconsidered at the next meeting of the Council after the veto nor at an adjournment of that meeting, as required by the New Jersey Borough Act.

"But," says the Court, "if I were doubtful on these points, still a writ of mandamus should not be awarded. It appears that there is at least doubt as to the status of the resolution; and it further appears that very recently the borough has undertaken to make a definite contract with a rival concern which calls for the purchase of a fire truck, . . . which should, for all I know, be perfectly valid. . . . Mandamus will not ordinarily be awarded when such award will create disorder or confusion or injuriously affect the rights of third persons."

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Public Finance.—By Harley Leist Lutz, Ph.D., Professor of Public Finance, Princeton University. D. Appleton & Co., New York. Second edition. 1929. 759 pp. $4.00.

This is a revised and somewhat enlarged edition of Professor Lutz's work on public finance. In the course of five years, since it first appeared in 1924, it has come to be regarded as an outstanding text on the subject, useful alike to students, public administrators, and general readers.

The present revision follows closely the general lines of the older edition. Two introductory chapters have been combined into one, and two new chapters have been added—one on poll tax and the other on the latest tendencies in American taxation. In all, about 75 pages have been added to the original text.

Only slight changes have been made in Part I, dealing with public expenditures. Considerable revision was warranted here, in view of the developments of the past five years. Part II, on public revenues other than taxation, stands practically as it was written in the older edition. A few footnotes have been added here and there which indicate an examination of the more recent literature bearing on the subject. Part III, covering taxation, has been somewhat rearranged and two chapters, as noted above, added to it. Why the author should have added a chapter on the poll tax is not clear; furthermore, his argument that it should be more widely applied under state supervision as an adjunct of the personal income tax fails to be convincing. The added chapter on characteristics and tendencies in American taxation apparently contains a few afterthoughts which might have been more properly integrated with the other chapters in Part III. But, taken all in all, this is the best part of the book. Next to it comes Part IV, on public credit. There has been some rewriting of Part IV in the new edition, but the general ideas and structure remain the same as before.

The last part, Part V, dealing with financial administration and legislation, is by far the weakest section of the book. It is to be regretted that the author did not see the necessity of making a complete revision of this part in the new edition. Two chapters constitute Part V, one on the budget and the other on some aspects of treasury organization and management. The discussion of the budget is largely historical and descriptive; it fails to bring out the fundamental importance of planning, direction and control in the financing of every governmental unit. Much has happened in public budgeting during the past five years, of which no notice has been taken in the new edition. The last chapter is also mainly historical and descriptive, treating neither treasury organization nor management in a practical way. The larger phases of financial administration, involving executive direction and supervision, current planning, central control of income and outgo, etc., are practically untouched. Yet these things are really basic in any modern system of public finance. A. E. Buck.

Our Home Town: Better and Finer Towns for Texas.—Texas is rapidly developing a population predominantly urban in character, therefore the future of the state is dependent upon the intelligence brought to town and city planning. The Kessler Plan Association, of Dallas, has accordingly broadened its scope and now gives practical aid to other towns and cities in their educational campaigns. A preliminary 12-page booklet, "Our Home Town," describes the service offered, and an accompanying multigraphed report of 6 pages shows some of the responses to the service. (Apply to John E. Surratt, Sec., Texas Town and City Planning Committee, Chamber of Commerce Bldg., Dallas, Texas.)

The Criminal and His Allies.—By Marcus Kavanagh. Introduction by Wade H. Ellis. The Bobbs Merrill Co., Indianapolis. 1928. 460 pp. $3.00.

Judge Kavanagh answers questions which can but force themselves upon the attention of the average citizen, the student of crime problems, and whoever besides finds food for thought in such discussions as that of Chief H. E. French of the Columbus, Ohio, Police Department, as to "Law Enforcement in the Hands of the Average Citizen," in the December issue of The American City (page 94). Do our laws fit the needs of the country? Do we need more laws, different laws, simpler laws? Why don't we enforce the laws we have? Do legal technicalities promote crime? What lawyers are accomplices in crime? What chance has a judge to ensure justice? What about the moron, the alien, the negro, the "bad woman"? What about the insanity defense? What place has the prison in making or curing criminals?

Judge Kavanagh answers all these and many more questions with the authority of a man who for over thirty years continuously has been Superior Court Justice of Cook County, Illinois, and who for the past several years has been conspicuously active on the Law Enforcement Committee of the American Bar Association. Crime commissions may investigate and report; bar associations may review and resolve; officials in intimate contact with crime conditions may proclaim the dangers day by day; but, says he in summing up, "there is only *one* way . . . all citizen organizations must unite and concentrate their influence on the members of the legislature," since so bitter is opposition in the legislatures of the states to criminal law reform that the bar associations have not the strength to combat it. Citizens, to work effectively for remedying bad conditions, must understand those conditions. Judge Kavanagh's book is a good First Reader on the whole subject.

Model Noise Ordinance.—The Model Noise Ordinance, prepared by the New York State Bureau of Municipal Information, and published in The American City, December, 1929, page 93, has been issued in multigraphed form (3 pp.) by the Municipal Administration Service, 261 Broadway, New York. "Agitation against noise now is so prevalent that it seems time to circulate this ordinance among city officials in other states . . . but care should be taken to adapt it to local conditions, and to requirements of state statutes." (Apply to the Service.)

The Northern and Southern Riverfront, Saint Louis.—The City Plan Commission of St. Louis, Mo. (Harland Bartholomew, Engineer), has issued a 42-page quarto volume in stiff boards, handsomely illustrated with photographs, maps, and colored charts, as Volume 2 of the city's waterfront development plan. (See The American City, Aug., 1928, p. 163, for reference to Volume 1, which dealt with the Downtown Business District waterfront.) The principal features of the present report are the proposals for a new airport and the development of a bluff drive, both of which are considered necessary to the future city. (For availability of the two volumes, apply to F. E. Lawrence, Jr., Secretary, City Plan Commission, Municipal Courts Building.)

Anniston, Ala.—An Industrial Location.—Complete details of the educational, recreational, and cultural, as well as the economic, commercial, and public service assets of the city are incorporated in this industrial survey, which is a 20-page study illustrated with photographs, maps, and charts. (Apply to United Chambers of Commerce, Anniston, Ala.)

Report of Committee on Standards in Playground Apparatus.—A committee of seventeen recreation executives, appointed by the Playground and Recreation Association of America, has prepared a set of tentative standards designed to aid committees in selecting apparatus for their playgrounds. These standards, with discussions of the principles involved, and other important considerations, are presented in *Playground and Recreation*, January, 1930, 4 pp. 25c. (Apply to the Association, 315 Fourth Ave., New York.)

County Government.—Judge Harry S. Truman, presiding official of the County Court of Jackson County, Mo., long an advocate of simplification of county government in the interest of efficiency and economy, has embodied in a paper recently delivered before the Club Presidents' Round Table on this subject, a comprehensive and sound plan for reorganization, and one which is expected to result in action at the next session of the State Legislature. 6 legal size pp., with 8 pp. of statistics and charts. (For availability, apply to the author.)

The Buhl Foundation, 1928-1929.—A 40-page brochure just issued is at once a first annual report and a history to date of the Foundation established by the will of Henry Buhl, Jr., in June, 1928. In addition to the summary of the year's grants in the fields of economics, education, recreation, social research, and special grants, and the financial statements, an account of Henry Buhl, the man, is given. There is also a brief history of "The Experience of Foundations." (Apply to C. G. Martin, Sec., Farmers Bank Bldg., Pittsburgh, Pa.)

The Community Problem; Is Community Research Advisable?—Two pamphlets issued by the Division of Municipal and Industrial Research, Massachusetts Institute of Technology, as a part of a series of open letters designed to illustrate the work of the Division, and the significance of this work to the community wishing effectively to promote its own economic development in the broadest and most efficient manner possible. 4 pp. each. (Apply to the Division.)

A Guide to the Literature of Rural Life.—A 24-page bibliography complied by Benjamin Y. Landis for the Department of Research and Education, Federal Council of Churches of Christ in America, contains general and special works chosen with due regard for their current value and accessibility. Economic, governmental, sociological, educational, and religious aspects of rural life are well represented. (Apply to the Association, 105 E. 22nd St., New York.)

British Civil Service Personnel Administration.—By Morris B. Lambie, University of Minnesota. A 66-page "Extract from Report of Wage and Personnel Survey," made by the Field Survey Division, Personnel Classification Board, reprinted from pages 403-469 of House Document 602, 70th Congress, 2nd session. (Apply to the Government Printing Office, Washington, D. C.)

The Economic Application of Aerial Surveys.—J. F. Bagley, Jr., presented before the Boston Society of Civil Engineers, at a meeting in September, 1929, a paper on this subject, which was followed by discussions. Together these comprise the feature material in the Society's *Journal* of November, 1919 (pp. 457-489), and constitute a definite contribution to the subject as it concerns the municipal official. 50c. (Apply to the Society, 715 Tremont Temple.)

ANNOUNCING NO. 84-HD

The Newest Double-Circulation Asphalt Kettle

The New 84-HD Maintenance Kettle has semi-elliptical springs, Timken roller bearings and low-slung curved chassis that will withstand hardest turning, twisting and backing. Steel-tired wheels are standard equipment. Rubber-tired wheels and heat guards at slight additional cost. (No. 84-HD is shown fully equipped with barrel hoist and hand spray. There is an additional cost for both.)

DOUBLE *circulation* of heat is a new method of heating never before used in a kettle of from 110- to 210-gallon capacity. This construction involves both redesigned combustion box and melting kettle.

The LB Oil Burner forces an intensely hot flame to rear of furnace—baffles prevent heat from rising until it reaches far end of kettle—then it is drawn by draft up and to front of kettle and out vent stack—*that* is *double circulation.* You have controlled heat properly distributed over a wide heating area—rapid melting of material with no coking or flashing.

The new screen construction in the melting tank keeps hot and cold material separate; there is complete circulation of heat around entire tank. You will not find another kettle like it—not *one* that is capable of the same production, not *one* that can be trailed or banged around as much. Ask for complete information about this kettle. We'll gladly tell you about it and you will be under no obligation.

N. B. ***This is the first of a series of advertisements formally announcing Littleford DOUBLE-CIRCULATION Asphalt Kettles. There will be another one next month.***

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Registration of Voters in the United States.—By Joseph P. Harris, Ph.D., Associate Professor of Political Science, University of Wisconsin. The Brookings Institution, Washington, D. C. 1929. 408 pp. $3.00.

Asserting that registration of prospective voters before election, although not now universal in the United States (three states having no form of registration), is essential to honest elections and will continue to spread, the author outlines the history of the subject and describes existing systems as investigated by him during fifteen months of field study, involving visits to over 30 states and nearly all large cities. The book, one of the Studies in Administration, of the Institute for Government Research, sets forth the various types; organization and personnel; records; procedure in original registration, check-ups, and identification at the polls; the cost of registration, and the law governing it. The systems of New York, Boston, Milwaukee, Omaha and San Francisco are covered in particular detail. The author served as Secretary of the National Municipal League Committee on Election Administration and prepared a report on a model registration system, embodying the principle of permanent registration; this is given in the present volume, with a few minor changes from its form as previously published as a supplement to the *National Municipal Review*, and represents his ideas of the best scheme, in the light of his researches, that can be followed generally, with such modifications as may be necessary in specific instances.

The Recall of Public Officers.—By F. L. Bird and F. M. Ryan. 402 pp. The Macmillan Co. $4.00.

This interesting volume presents a thoughtful survey of the workings of the recall in the state of its origin. California has had over twenty-five years' experience with this device, which for many years was linked with the initiative and referendum as part of the progressive program for the recovery of popular sovereignty. In this period the recall has been applied to state officers in eleven states, and these authors estimate that fully seven hundred cities have it as "a gun behind the door." The recall exists for practically all public officers in California, including some judges and city managers. The authors analyzed the results of some 200 recall efforts and came to the conclusion that neither the rosy hopes of its advocates nor the gloomy forebodings of its opponents have been realized. They find many instances where its use was amply justified and a few which exhibit the demerits of this device. They think that in California, at least, it has apparently come to stay. The authors have examined with some care the procedure employed in the various cities of California and have many suggestions that should be of interest to charter makers everywhere.

Forests and Mankind.—By Charles Lathrop Pack, President, American Tree Association; and Tom Gill, Forester, Charles Lathrop Pack Forestry Trust. The Macmillan Company, New York. 250 pp. $3.00.

Mr. Pack stands, undoubtedly, as dean of popular educators in forestry. Tom Gill was formerly in charge of educational activities of the U. S. Forest Service. The two have designed this work as an informative one in all departments of forestry, and, incidentally, as propaganda for forest conservation. Suggestive titles of a few of the 21 chapters are: "The Forests of Long Ago"; "Forests of the World"; "Forests of the United States"; and "National Forests"; with a group of chapters on forestry development and its methods, and others on the gifts of the forest, and the enemies of the forest. A bibliography is appended.

One Hundred Thousand Shade Trees.—Bulletin No. 146, Massachusetts Forestry Association, 4 Joy St., Boston, Mass., outlines a plan for a 1930 "Shade Tree Revival" to celebrate the Tercentenary of the founding of the Massachusetts Bay Colony. Recommendations are based on a state-wide shade tree survey; and prizes are offered to the towns producing the best half-mile of street or roadside trees. (Apply to the Association, Harris A. Reynolds, Secretary.)

How Great Cities Are Fed.—By W. P. Hedden. D. C. Heath & Co. 302 pp. $2.80.

The author of this small but significant addition to the Heath Agricultural Economics Series is Chief of the Bureau of Commerce of the Port of New York Authority. Though the book is of interest to the student of agricultural production and marketing, it is no less interesting to the student of urban society or of modern economic processes generally. From the standpoint of urban life the chapters on refrigerator cars, apple shipping and other technical features may be of less interest, but the chapters which deal with food sources, watersheds, milk sheds and food sheds, with food terminals and the handling of perishable foods at such terminals, with the organization and function of middlemen and retailers, with wastes and their relation to marketing costs, are of considerable interest. There is also a particularly important chapter on the public control and inspection of food supplies, with numerous references to these services throughout the volume.

The city planner will be particularly interested in Mr. Hedden's material on traffic and the location of terminals. He finds, for example, that within the last decade the motor truck has banished the railroad from milk carriage in most cities. Trucks, many of them bearing glass-lined tanks, now carry more than 80 per cent of the milk brought into most cities. In Indianapolis and Milwaukee, their share exceeds 97 per cent. On the other hand, in New York City the motor haulage is but one per cent of the total. This and many other factors have an important and obvious bearing on the location of terminals. The concluding chapter, on municipal inspections, is also replete with interesting material. The volume is well organized and imaginatively illustrated.

The Housing of Negroes in Washington, D. C.—By W. H. Jones. Howard University Press, Washington. $2.15.

This little volume, sponsored by the Interracial Commission of the Washington Federation of Churches, offers more than a survey of the housing of the colored population of the city of Washington. In many ways it is a study of the negro community within the city. Its carefully arrayed data on home ownership, overcrowding, lighting of streets and homes, newspaper and magazine reading, will be of interest to all who are interested in the social environment of the negro in our northern cities, for, apart from its serious alley problem, Washington presents all of the aspects of a northern city. As the editors of the volume wisely remark, "bad housing conditions among any group are a menace to the whole community—for disease germs whether in the field of physical, moral, or social health know no racial barriers."

An Analysis of 11,180 Misdemeanor Cases.—Pamphlet No. 6 of the Cincinnati Bureau of Governmental Research (December, 1929), is the report of a study of misdemeanor cases for the first six months of 1929. This study is one of a series by the Bureau in the criminal justice field. Some of the earlier of these led to the city's installation of a record system, and some of the more recent of them have been made possible by reason of the system. The present study is a 12-page pamphlet, presenting in charts and text analyses of cases by employment conditions, color, age, area, etc., and is to be followed by a police adequacy survey to include neighboring territory. (Apply to the Bureau, 312 Ninth St., Cincinnati, Ohio.)

A Guide for Preparing Annual Police Reports.—The Committee on Uniform Crime Records, International Association of Chiefs of Police, 261 Broadway, New York, has issued in revised form the Guide tentatively presented a year ago. It is in the form of a 32-page booklet covering descriptions, illustrations, and sample forms of the well-planned police report. The importance of adequate annual police reports, from the Committee's standpoint, consists in their potential value as a source of crime record data. Their importance in general is obvious to police chiefs and other public officials. The Guide is an invaluable contribution towards a higher standard in this matter. (Apply to the Committee.)

Financial Statistics of Cities, 1927.—Annually since 1922, and occasionally between 1915 and that date, the Bureau of the Census, Department of Commerce, Washington, D. C., has issued the Financial Statistics of Cities Having a Population of Over 30,000. The purpose of these is to give general circulation to details of administration of cities' affairs. As formerly, THE AMERICAN CITY and The Municipal Index issued the general municipal government cost tables about a year in advance of the volume's appearance. (See the former, issues of January and February, 1929, and the 1929 Municipal Index.) Buckram-bound, 503 pp. $1.25. (Apply to the Government Printing Office, Washington, D. C.)

Bulletin of the National Business Survey Conference.—"Moving Ahead!" is the title of the front-page editorial of this 8-page bulletin. It is signed by Julius H. Barnes, Chairman, and, in common with the other contents, stresses the attention being paid by governmental trade and commercial organizations, in general and specifically, to the maintenance of national economic stability. Since the Conference seeks to carry into effect immediately a nation-wide stabilization program, conforming with the policies of President Hoover, the occasional issues of the Bulletin during the coming months will be significant to public officials and others. (Apply to the Conference, 1615 H St., Washington, D. C.)

Recreation, Civic Center, and Regional Plan; Riverside, Calif.—This is the second published volume of the Master Plan for Riverside, for which Charles H. Cheney, Palos Verdes, Calif., is the consultant. (For discussion of certain phases of the Major Street Traffic Plan and Report, presented in Volume 1, see THE AMERICAN CITY, December, 1928, page 160.) A comprehensive playground, school, and recreation system plan; a comprehensive park system plan with connecting parkways; a civic center, and public and educational group plan; a plan for embellishing and increasing the amenities of life; and a regional highway plan; all these are here presented in well-organized and attractively illustrated form. The report is exceptionally complete on the esthetic development side. 48 pp. quarto. (Apply to Charles H. Cheney, Palos Verdes, Calif.)

A United New England.—In a strikingly made 48-page quarto publication, illustrated, the New England Council tells the story of four years of progress. The Council's purposes, as stated by Redfield Proctor, President, are "in the interest of national prosperity, which requires a prosperous New England, . . . to develop and maintain a sense of the importance of New England as an economic area of the United States; to determine what is necessary to develop and maintain New England's economic progress; and to promote that progress." The Council's great major achievement, it believes, has been provision of machinery for cooperative efforts on the part of the communities of the New England States. (Apply to the Council, Statler Building, Boston, Mass.)

The Municipal Research Bulletin, Buffalo, N. Y.—A 20-page "Report of Progress," dated January, 1930, is in the form of a report to the Board of Directors, by Harry H. Freeman, Director of the Bureau's activities since June 1, 1927. (Apply to the Bureau, White Building, Buffalo, N. Y.

Theory and Practice in State Administrative Organization.—A paper, by Harvey Walker, Ohio State University, presented at a Round Table on Administration, at the New Orleans meeting of the American Political Science Association, in December, under this title, is an able and interesting presentation of an important subject. 12 pp., multigraphed. (Apply to the author.)

How to Plan for Your Comfort, Happiness, and Prosperity.—Some statements of the principles of regional planning are here presented in a 16-page publicity pamphlet attractively illustrated with photographs. It has been prepared by the Regional Planning Federation of the Philadelphia Tri-State District. (Apply to the Federation, 1700 Fox Building, Philadelphia, Pa.)

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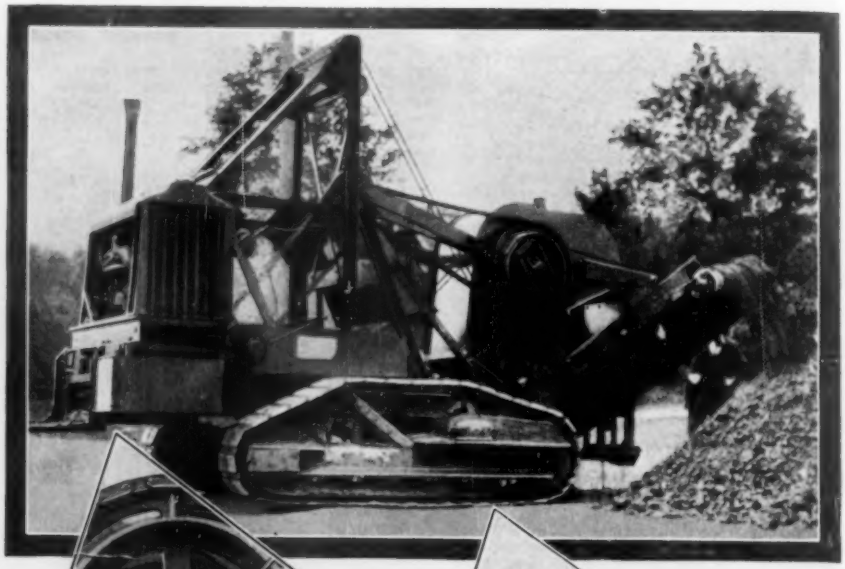

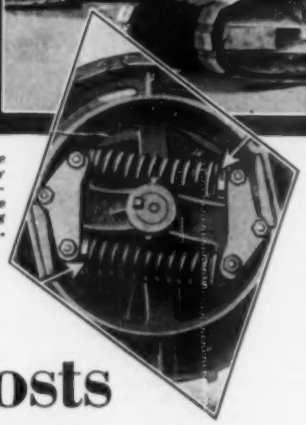

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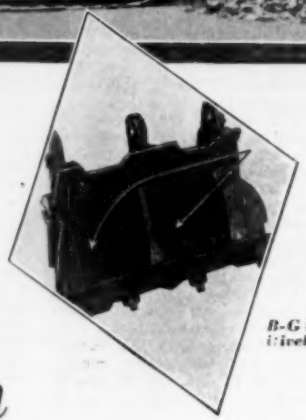

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Program, Stabilization of Construction: Statement No. 1.—The first of a series of statements to suggest how programs of public improvements can be carried out along sound economic lines, prepared by the Civic Development Department of the Chamber of Commerce of the United States, cooperating with the National Business Survey Conference. Statement No. 1, which was sent to all chambers of commerce in cities of 25,000 or over, includes an article by Otto T. Mallery entitled "Your Part in Stabilizing Business"; also brief items regarding resolutions of committees of the National Conference on Street and Highway Safety relating to needed repairs to automobiles and roads. 6 pp. (Apply to the Chamber, Washington, D. C.)

The Municipal Code of Cedar Rapids, Iowa.—One city has prepared and printed a complete codification of the laws and ordinances under which it conducts its affairs and public services. This new Cedar Rapids Code is printed in the form of a 185-page book with type, style, and paging following the State Code. It is easily readable, well arranged, and adequately indexed. Copies are bound in law buckram, also in cardboard. (Apply to the Mayor.)

The Chicago Woman's City Club.—The extent to which a woman's city club may enter into the vital public and social welfare matters of its community is well illustrated in the month-by-month record of the Chicago organization as recorded in its *Bulletin*. The issue of December, 1929, contains a "Summary of a Report of the Joint Commission on Real Estate Valuation" of Cook County, especially prepared for it, followed by discussions of the effects of reassessment on the city's corporate fund revenue, and of the city's probable financial condition at the end of the year. It contains also an article, "Appraising Your City," by Professor Wm. L. Bailey, Northwestern University. (The Club is conducting a civic survey of Chicago.) Other articles and committee reports make up the 28 pp. 10c. (Apply to 360 N. Michigan Ave., Chicago, Ill.)

Tentative List of State Regulations, Orders, Advisory Pamphlets, and Labor Laws Relating to Safety in Industry.—A bibliography of 18 multigraphed pages issued under date of November, 1929, by the National Bureau of Casualty and Surety Underwriters. (Apply to the Bureau, 1 Park Ave., New York)

Suggested Sanitary Code for Cities.—The New York State Department of Health and the New York State Conference of Mayors and Other Municipal Officials have collaborated in preparing material for the use of municipalities wishing to enact local health codes. This is so presented as to conform with New York State provisions, but is of general interest and value. Its nine chapters include: Definitions; Communicable Diseases; Milk and Cream; Meat and Meat Products; Food and Food Handling; Sanitation; Swimming Pools; Miscellaneous; Penalties and Provisions. See Dr. Williams' article, page 131.

Other Reports Received

CHICAGO, ILL.—Annual Report, Retirement Boards, as of June 30, 1929. 44 pp.

FLINT, MICH.—Industrial Development Report, "Progressive Flint." 28 pp.

KEENE, N. H.—Annual Report, Water Department, to December, 1929. 52 pp.

NEW ORLEANS, LA.—Annual Report, Port Commission, to August 31, 1929. 56 pp.

PASADENA, CALIF.—Annual Report, Water Department, 1928-1929. 64 pp.

SAN DIEGO, CALIF.—Annual Report by the Harbor Commission, to July, 1929. 72 pp.

CONVENTIONS—WHEN AND WHERE

FEBRUARY 11-13.—NEW ORLEANS, LA.
American Concrete Institute. Annual convention. Secretary, Harvey Whipple, 2970 West Grand Boulevard, Detroit, Mich.

FEBRUARY 11-14.—ANN ARBOR, MICH.
Conference on Highway Engineering, University of Michigan. Secretary, R. E. Morrison, University of Michigan, Ann Arbor, Mich.

FEBRUARY 12-14.—OTTAWA, ONT.
Engineering Institute of Canada. Annual meeting. Secretary, R. J. Durley, 2050 Mansfield Street, Montreal, Que.

FEBRUARY 12-14.—LAWRENCE, KANS.
Kansas Water Works Association. Annual meeting. Secretary-Treasurer, E. A. Boyce, State Board of Health, Lawrence, Kans.

FEBRUARY 13-17.—DENVER, COLO.
American Water Works Association, Rocky Mountain Section. Annual meeting. Secretary-Treasurer, Dana E. Kepner, Colorado State Board of Health, 420 State Office Building, Denver, Colo.

FEBRUARY 13.—BOSTON, MASS.
Massachusetts Highway Association. Annual meeting. Secretary, John M. McCarthy, 318 State House, Boston, Mass.

FEBRUARY 13-15.—ATLANTIC CITY, N. J.
New Jersey Mosquito Extermination Association. Annual meeting. Secretary, Dr. Thomas J. Headlee, State Experiment Station, New Brunswick, N. J.

FEBRUARY 18-19.—NEW HAVEN, CONN.
Connecticut Society of Civil Engineers. Annual meeting. Secretary, C. M. Blair, Box 235, New Haven, Conn.

FEBRUARY 18-19.—EASTON, PA.
Pennsylvania Association of Planning Commissioners. Annual conference. Secretary-Treasurer, Leo J. Buettner, City Hall, Johnstown, Pa.

FEBRUARY 19-21.—SYRACUSE, N. Y.
Association of Highway Officials of North Atlantic States. Annual convention. Secretary-Treasurer, A. Lee Grover, State Highway Commission of New Jersey, Trenton, N. J.

FEBRUARY 23-27.—ATLANTIC CITY, N. J.
National Education Association—Department of Superintendence. Annual meeting. Executive Secretary, Sherwood D. Shankland, 1201 16th Street, N. W., Washington, D. C.

FEBRUARY 25-28.—WICHITA, KANS.
Southwest Road Show and School. Annual Show and School. Manager, F. G. Wieland, Exposition Building, Water and Williams Streets, Wichita, Kans.

FEBRUARY 26-28.—TORONTO, ONT.
Ontario Good Roads Association. Annual convention. Secretary, S. L. Squire, 98 Albany Avenue, Toronto, Ont.

MARCH 5-7.—REGINA, SASK.
Saskatchewan Association of Rural Municipalities. Annual convention. Secretary, J. J. McGurran, Nokomis, Sask.

MARCH 13.—CONCORD, N. H.
New Hampshire Good Roads Association. Annual meeting. Secretary, Frank D. Sleeper, Laconia, N. H.

MARCH 17-18.—ALLENTOWN, PA.
Pennsylvania State Association of Township Commissioners. Annual convention. Secretary-Treasurer, M. B. Black, Aunville, Pa.

MARCH 21-22.—TRENTON, N. J.
New Jersey Sewage Works Association. Annual meeting. Secretary, John R. Downes, Bound Brook, N. J.

MARCH 24-28.—CLEVELAND, OHIO.
Building Officials' Conference. Annual meeting. Secretary-Treasurer, Col. John W. Oehmann, Inspector of Buildings, District Building, Washington, D. C.

APRIL 2-5.—BOSTON, MASS.
American Physical Education Association. National convention. Secretary, Dr. J. H. McCurdy, Box G. Highland Section, Springfield, Mass.

APRIL 7-9.—DAYTONA BEACH, FLA.
Southern Commercial Secretaries Association; Florida Commercial Secretaries Association. Joint meeting. Chairman, Karl Lehman, Orange County Chamber of Commerce, Orlando, Fla.

APRIL 10.—KINSTON, N. C.
Eastern Carolina Chamber of Commerce. Annual meeting. Secretary, N. G. Bartlett, Kingston.

APRIL 14.—NEW YORK.
National Committee on Prisons and Prison Labor. Annual meeting. Secretary, Miss Julia K. Jaffray, 4 West 57th Street, New York.

APRIL 14-19.—MEMPHIS, TENN.
National Flood Control and Navigation Congress and Exposition. Address, R. E. Logedon, Chamber of Commerce Convention Bureau, Memphis.

APRIL 15-17.—SAVANNAH, GA.
American Water Works Association—Southeastern Section. Annual convention. Secretary, F. W. Chapman, Supt. of Water Dept., Camden, S. C.

APRIL 17-19.—MISSOULA, MONT.
American Water Works Association—Montana Section. Annual meeting. Secretary, Herbert B. Foote, Division of Water and Sewage, State Board of Health, Helena, Mont.

APRIL 17-19.—OCALA, FLA.
Florida Engineering Society. Annual meeting. Secretary, J. R. Benton, Gainesville, Fla.

APRIL 28-MAY 1.—WASHINGTON, D. C.
Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, 1615 H Street, N. W., Washington, D. C.

APRIL 28-MAY 3.—LOUISVILLE, KY.
National League of Women Voters. Convention. Executive Secretary, Miss Gladys Harrison, 532 17th Street, N. W., Washington, D. C.

APRIL 29-MAY 1.—MINNEAPOLIS, MINN.
American Forestry Association. Annual meeting. Executive Secretary, Ovid M. Butler, 1523 L Street, N. W., Washington, D. C.

MAY 5-8.—WASHINGTON, D. C.
American Red Cross. Annual convention. Secretary, Miss Mabel T. Boardman, National Headquarters, Washington, D. C.

MAY 12, WEEK OF.—ATLANTIC CITY, N. J.
National Fire Protection Association. Annual meeting. Managing Director, Franklin H. Wentworth, 60 Batterymarch Street, Boston, Mass.

MAY 21-23.—WASHINGTON, D. C.
American Institute of Architects. Annual convention. Executive Secretary, E. C. Kemper, The Octagon, Washington, D. C.

JUNE 2-6.—ST. LOUIS, MO.
American Water Works Association. Annual convention. Secretary, Beekman C. Little, 29 West 39th Street, New York.

JUNE 7-12.—BOSTON, MASS.
International Association of Policewomen. Annual meeting. President, Mrs. Mina C. Van Winkle, 630 Louisiana Ave., Room 3, Washington, D. C.

JUNE 8-14.—BOSTON, MASS.
National Community Center Association. Semi-annual meeting, Secretary, L. E. Bowman, 403 Fayerweather Hall, Columbia University, New York.

JUNE 17-19.—DENVER, COLO.
International Association of Comptrollers and Accounting Officers. Convention. Secretary, Carl H. Chatters, City Auditor, Flint, Mich.

JUNE 23-26.—SAN FRANCISCO, CALIF.
American Electric Railway Association. Convention. General Secretary, J. W. Welsh, 292 Madison Avenue, New York.

JUNE 23-25.—DENVER, COLO.
National Conference on City Planning. Annual conference. Secretary, Flavel Shurtleff, 130 East 22nd Street, New York.

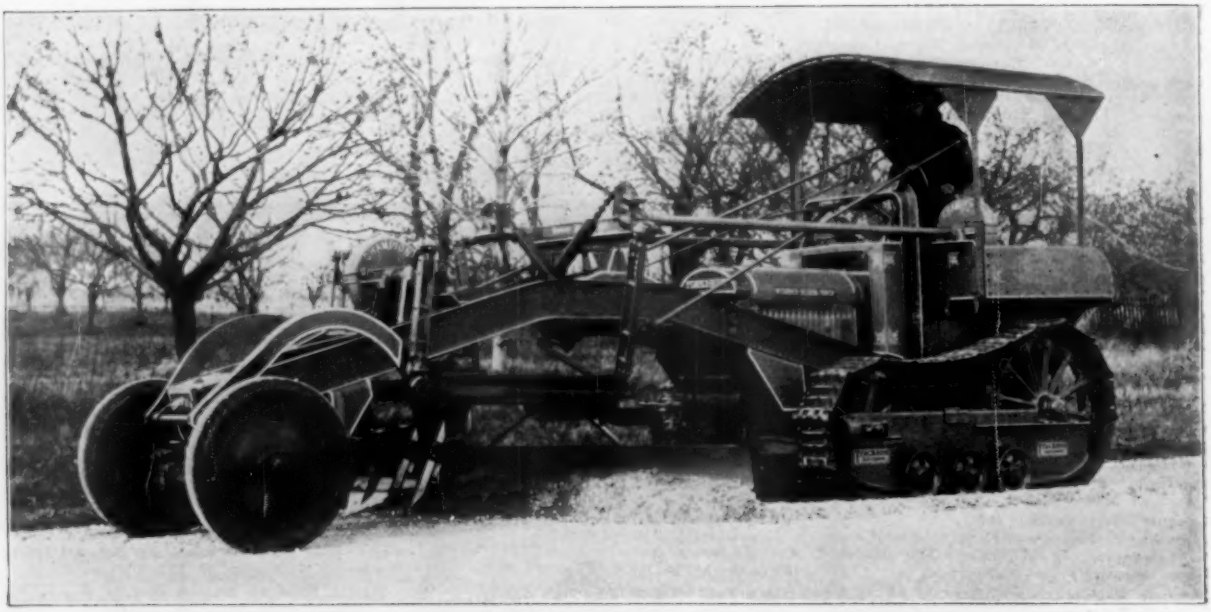
JULY 14-17.—LIEGE, BELGIUM.

JULY 18-19.—ANTWERP, BELGIUM.
International Union of Local Authorities. International Congress. General Secretary, E. Vinck, Rue de la Regence, Brussels, Belgium.

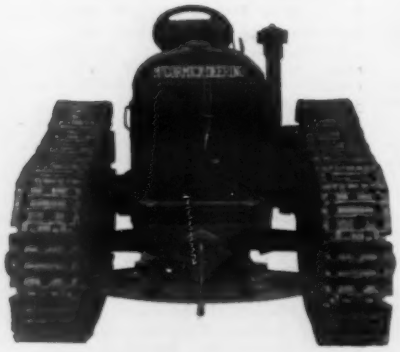
SEPTEMBER 8.—HALIFAX, N. S.
International Association of Fire Fighters. Convention. Secretary-Treasurer, George J. Richardson, A. F. of L. Building, Washington, D. C.

SEPTEMBER 29-OCTOBER 4.—PITTSBURGH, PA.
National Safety Council. Annual convention. Managing Director, W. H. Cameron, 108 East Ohio Street, Chicago, Ill.

Improved Power Grader Performance



TRACKSON
McCORMICK-DEERING



Model LH

MODEL LH Trackson McCormick-Deering is correctly designed for motor grader operation. Because of wide clearance between tracks and motor the grader frame can be mounted between them, thus insuring correct control and best results at the blade. Differential gears in rear end assure easy steering through front wheels of grader. No complicated clutch hook-ups necessary. No extra operations when turning. Corrugated track shoes provide ample traction without marring road surface. For unusual conditions one-bolt grouters can be quickly attached. No matter what grader you have or intend buying let us show you why Trackson Crawlers will improve its performance.

Trackson Company
FULL-CRAWLERS & TRACTOR EQUIPMENT
1310 **SOUTH FIRST ST.** **MILWAUKEE, WIS.**

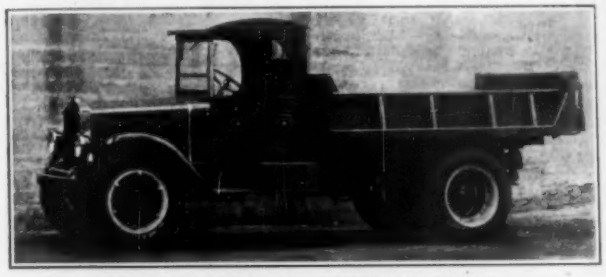
NEWS AND ILLUSTRATIONS

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

A New 6-Cylinder Motor Truck

To the fields where diversified hauling requirements demand power, capacity and high, safe speed the new Mack six-cylinder Model BC motor truck, made by Mack Trucks, Inc., 25 Broadway, New York, brings a margin of earning capacity and flexibility. This new model does not supplant an existing Mack model. Over long distances, it will take a full load at a sustained speed to meet the most exacting requirements, and its 90-horsepower engine assures the power and acceleration so essential to efficiency in maintaining schedules.

This model has a seven-bearing crankshaft, drop-forged and case-hardened and counterbalanced with separate counterweights. All main bearings are 3 inches in diameter. The camshaft is mounted in four bearings and is 1¼ inches in diameter, the valves being at the right side and having flat seats.



THE NEW MACK 6-CYLINDER MODEL BC

The six cylinders of the engine are cast en bloc with demountable head cast in one piece. The engine has a 3¾-inch by 5½-inch bore and stroke and offset high compression chambers. The pistons are of aluminum alloy and the drop-forged steel connecting rods are tubular. Ignition is by battery distributor with semi-automatic advance. A cold circulation type by-pass is incorporated in the cooling system set to close at 150 degrees and open at 175 degrees. The clutch is of the Mack single-plate, dry type, with the clutch housing and transmission bolted to the crankcase to form a unit power plant. The combined fan and water pump are mounted on the front of the cylinder block. Among the other interesting features of this engine are crankcase ventilation, throttle-controlled exhaust heat, and the high-pressure oiling system. This engine will develop 100 horsepower at 2,400 r.p.m., giving power at reasonable engine speed.

The chassis is rugged in construction, the final drive being the Mack dual reduction type with inclined banjo-type axle and full-floating shafts, the center support carrying the driveshaft hand brake assembly. The gas tank is located under the seat, with filler spout and gage at the right side of the can. Mack rubber shock insulation has been used extensively through this model, all springs, as well as the radiator and cab, being mounted in blocks of live, resilient rubber. The bottleneck plant at the front of the frame and the centerpoint steering allow for an unusually short turning circle.

Four-wheel internal brakes operated mechanically with vacuum booster give an important factor of safety.

White Metal Chromium-plated Traffic Line Markers

To meet the exacting requirements demanded by modern traffic, the Saf-T-Lin Marker Corporation, Hartford, Conn., has designed the Saf-T-Lin marker, which is made of special high-strength, non-corrosive cast Stanco white metal and chromium-plated.

To install this marker, a hole 1½ inches deep with two angled recesses at the bottom is prepared, provision also being made for the two auxiliary prongs. The marker is then placed in position and the central hole filled with molten lead, the excess at the top being peaned smooth. This lead plug holds the marker firmly in position and also serves as a shock absorber. The mechanical strength of the marker is sufficient to withstand severe service conditions. The strength of the white metal, together with the ribbed reinforcements, will hold up under heavy pressures. The chromium-plated surface unites intimately with the special white metal, practically alloying with it, and the octagon shape produces multiple reflectors, thereby increasing the visibility, a feature especially appreciated at night.

This company also manufactures a marker of similar design, cast of a special non-corrosive aluminum alloy and stainless steel.

New Trackson Appointments

The Trackson Co., 500 Clinton Street, Milwaukee, Wis., has announced the appointment of the Stannard - Arnold Machinery Co., 149 West Second South Street, Salt Lake City, Utah, as distributors of Trackson tractor equipment for the McCormick-Deering tractor. The territory to be covered by this company includes Utah, and part of Idaho, Nevada and Wyoming.

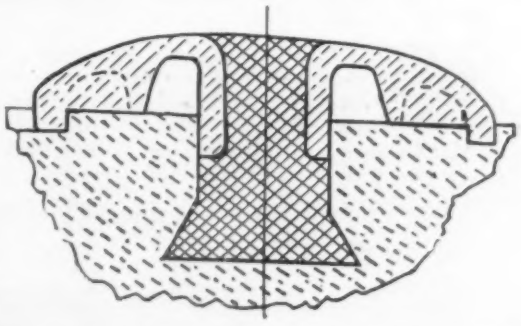
Worthington Opens California Company

On January 2, 1930, the Worthington Pump & Machinery Corporation, 2 Park Avenue, New York, announced that after that date the interests of the Corporation in the California territory would be served by a local company, the Worthington Machinery Corporation of California, Ltd., with headquarters at Los Angeles and San Francisco. This new company will take over the sales and engineering staff and the warehouse facilities of The Worthington Co., Incorporated in California, and will handle all that territory. This arrangement will enable the carrying of a larger and more diversified stock of Worthington products and parts and give more prompt service to California customers.

H. D. Cornell, who has been President of the Worthington Machinery Corporation of Oklahoma, will be President of the new corporation and direct it. George W. Hawkins, who has been Director of Sales of the Worthington Pump & Machinery Corporation, will also go with Worthington-California as Vice-President.

Officers of Diesel Engine Manufacturers' Association

The Diesel Engine Manufacturers' Association has announced the election of the following officers for 1930: President, A. E. Ballin, McIntosh & Seymour Corporation, Auburn, N. Y.; Vice-President, George Codrington, Winton Engine Co., Cleveland, Ohio; Chairman of Executive Committee, E. T. Fishwick, Worthington Pump & Machinery Corporation, New York; Chairman, Technical Committee, H. W. Dow, Nordberg Manufacturing Co., Milwaukee, Wis.; Secretary and Treasurer, H. A. Pratt, Ingersoll-Rand Co., New York.



SECTION OF A SAF-T-SIGN MARKER INSTALLED IN A CITY STREET

Bulletins, data and other specific information are yours for the asking.

Arizona—*Phoenix*—Charles J. Houpe, 9th & Grand Aves.
California—**Los Angeles*—Gay Engineering Corporation of Calif., 2650 Santa Fe Ave.
San Francisco—Gay Engineering Corporation of Calif., 593 Market St., Balboa Bldg.
Colorado—**Denver*—Andrew Bruehne, 816 Platte St.
Georgia—*Atlanta*—J. Kilian, 1552 So. Gordon St., S. W.
Illinois—*Chicago*—Brunswick-Kroeschell Co., 4221 Diversey Ave., Cragin Station.
C. J. Heinzelman, 1620 Monadnock Block.
Indiana—*Indianapolis*—Cox Refrigerating Engineering Co., 1933 E. Riverside Drive.
Iowa—*Sioux City*—Allan Ice Machine Co., 1911 Ingleside Ave.
Waterloo—Allan Ice Machine Co., Box 232.
Louisiana—**New Orleans*—W. W. Taylor, 606 Whitney Bank Bldg.
Massachusetts—*Boston*—Wm. P. Koehle, Room 405 Weld Bldg., 176 Federal St.
Michigan—*Detroit*—E. J. Mueller, 2457 Woodward Ave.
Wallich Ice Machine Co., 517 E. Larned St.
Grand Rapids—Boot & Co., 115 Fulton Street, W.
Saginaw—W. S. Robbennolt Refrig. Co., 721 Monroe St.
Minnesota—*Minneapolis*—Allan Ice Machine Co., 407 So. 4th St.
Missouri—*Kansas City*—Allan Ice Mach. Co., c/o Castle Apts.
H. Flemming, 117 W. Armour Blvd.
Natkin Engineering Co., 314-318 West 10th St.
St. Louis—C. F. Schulte, 6036 Marmaduke Ave.
Nebraska—**Omaha*—Allan Ice Machine Co., 36th & K. Sts.
New Jersey—*New Brunswick*—Brunswick-Kroeschell Co.
New York—*New York*—F. J. Flocke, 220 Broadway.
Ohio—*Canton*—The C. P. Wood Co., 2430 Lake Road Blvd.
**Cincinnati*—The C. P. Wood Co., 951 Blair Ave.
**Cleveland*—The C. P. Wood Co., 1012-1014 Webster Ave.
**Youngstown*—Interstate Refrig. Co., 2507 Glenwood Ave.
Oklahoma—**Ponca City*—The Modern Equipment Co., 315 E. Grand Ave.
Ontario, Canada—*Toronto*—J. L. Wilson & Sons, Ltd., 2742 Dundas St., W.
Oregon—**Portland*—McIntosh Ice Machine Co., 548 Thurman St.
Pennsylvania—*Philadelphia*—Fred Nolde, Suite 705, Park Bldg., 23 So. 52nd St.
The C. P. Wood Co., 1331 Penn Ave.
Texas—*Dallas*—B. D. Wood, 1235 Allen Bldg.
**El Paso*—C. Biggerstaff, 1606 Bassett Ave., P. O. Box 144.
**Houston*—Dedman Foundry & Machine Co., Inc., Foot of Buffalo St.
Utah—**Salt Lake City*—L. A. Roser, 253 W. 1st South St.
Washington—**Seattle*—W. E. Stone & Co., 1200 4th Ave., So.
Yakima—Geo. W. Casebolt, 14 South 11th Ave.

***Designates Stock Points.** 18-30

STRATEGICALLY located, Vilter Stock-points, Representatives and Distributors assure every user of refrigeration equipment in these United States a service that is incomparable. . . . Your request for specific data, addressed the Company or our nearest office, will bring a demonstration of the Vilter conception of service. . . . . Why not write us *now*?

THE VILTER MANUFACTURING COMPANY
871 CLINTON STREET . . . . MILWAUKEE, WISCONSIN

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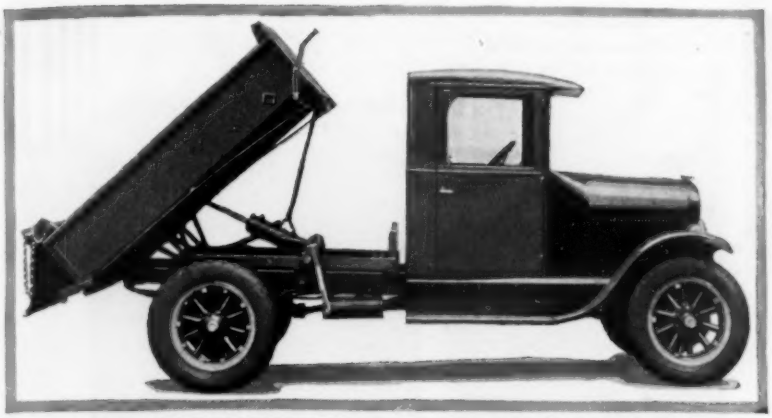
ICE MAKING AND REFRIGERATION MACHINERY

When you write for that catalog, kindly mention THE AMERICAN CITY.



A DUMP BODY OPERATED BY THE WOOD HYDRAULIC HAND HOIST

A New Hydraulic Hand Hoist for Light Trucks

A new hydraulic hand hoist for light trucks which lifts the load by oil pressure has recently been announced by the Wood Hydraulic Hoist & Body Co., Detroit, Mich. This hoist operates on the hydraulic principle, with a rotary gear type oil pressure pump to supply the pressure. Power is applied to the oil pump by a hand crank on the right-hand side of the chassis. The action of the pump is simple. Oil under pressure is pumped into the cylinder, forcing the piston and piston rod outward. The piston rod outer end is fastened to the underside of the body.

The load is raised and supported on a solid cushion of oil. When the crank is stopped, the body remains stationary in an elevated position without the use of catches, ratchets, brakes or any mechanism. To lower, the control valve is placed at "down position" and the body descends. The fixed hinging point insures sufficient ground clearance when the body is in dumping position. A simple-operating tailgate manual set is provided, with the control handle on the right side of the body at the front. The body subframe is of structural steel, welded to the floor of the body and properly braced.

The new hydraulic hand hoist unit, weighing 850 and 900 pounds complete, comes in 1- and 1½-cubic yard capacities. The pump body is nickel-iron, pump gears are steel cut, the pump valve is brass, and the hoist sub-frame structural steel, electrically welded throughout. The body comes in 6-foot, 6-inch and 7-foot lengths, with a width of 5 feet, constructed of 10-gage high-resistant sheet steel and welded throughout. Fittings are malleable castings, and the tailgate is double acting.

A Crossing Gate the Motorist Cannot Crash

The Highway Guardian, made by the Franklin Railway Supply Co., Inc., 17 East 42nd Street, New York, has been developed to provide a yielding barrier which will prevent any vehicle from entering a railway crossing and will do so without injury to the operator or passengers. It consists of three major parts: the yielding barrier arm; the pedestal supporting the barrier arm, in which is housed the operating mechanism; and the snubber over which the barrier arm locks when in the closed or down position, and which provides the yielding resistance.

The barrier arm consists of a light but strong skeleton steel work formed in the shape of a crescent or bow, securely fixed to a pivoting base, which in turn is mounted on the pedestal. A steel cable is tautly stretched to form a chord of the crescent so as to make a resilient member for contacting with oncoming vehicles. The whole barrier arm can pivot on the pedestal both vertically and horizontally, and the whole structure is balanced so that when lowering to closed position a force of only 5 pounds is sufficient to arrest the motion of the barrier. The horizontal movement is provided, so that if a vehicle should strike the barrier before it is in locked position, it will be pushed harmlessly to one side, allowing the vehicle to proceed.

The pedestal is a cast steel housing securely fixed to the foundation and providing housings to receive the ball trunion bearings on which the barrier arm pivots for vertical movement. Inside the pedestal is arranged all the operating and control mechanism, consisting of a motor-driven hydraulic pump, hydraulic cylinder and piston for raising the barrier arm, a magnet and pilot valve for controlling the motor and the hydraulic cylinder, the hydraulic reservoir, a relief by-pass valve to control the pressure in the hydraulic cylinder, suitable switches for lights, etc.

The snubber is located on the right-hand or opposite side of the road to the pedestal and is arranged with an engaging-post over which the outer end of the barrier arm fits when in closed position. It is so shaped that the barrier arm locks under the post when struck by vehicles approaching the track, but allows the barrier arm to lift and swing free if the barrier should be struck by a vehicle leaving the tracks. The snubber is mounted in a heavy steel frame and consists of a cross head which is an integral part of the engaging-post, connected through a piston rod to a hydraulic dash pot and permits a movement approximately parallel to the road.

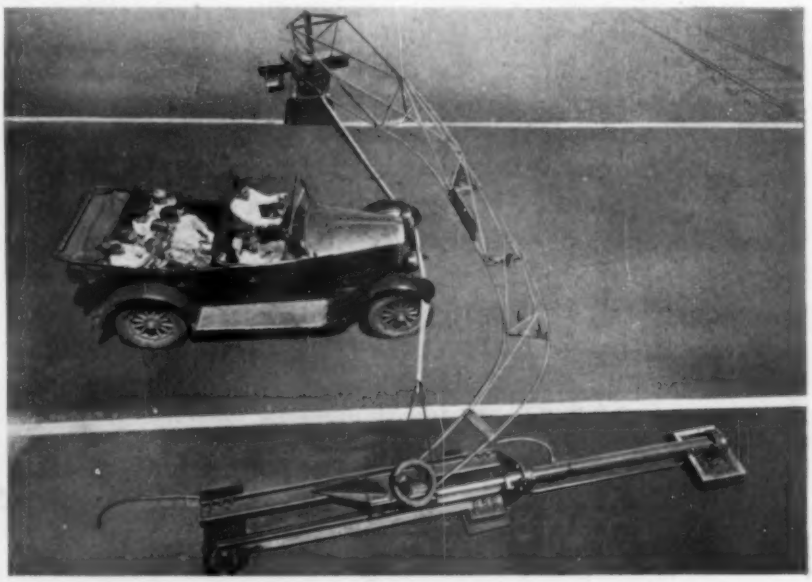
The Highway Guardian is made for manual, semi-automatic or automatic control.

Perine & Co. Opens Westchester Office

Perine & Co., Singer Building, New York, has announced that Hon. Joseph F. Loehr, retiring Comptroller of the city of Yonkers, N. Y., is serving as Resident Manager of Perine & Co.'s new Westchester office in the Park Building, 28 South Broadway, Yonkers. Audits, examinations and reports upon public, financial, commercial and other accounts will be made from this office by an experienced staff.

Gamewell Loses Vice-President by Death

Arthur L. Tinker, Vice-President of the Gamewell Co., Newton Upper Falls, Mass., and its District Sales Manager for the New York territory, passed away at his home in Stamford, Conn., on January 11, following a brief illness. Mr. Tinker was associated with the Gamewell Co. for 35 years.



CAR BROUGHT TO FULL STOP BY HIGHWAY GUARDIAN. THE SNUBBER IN THE FOREGROUND HAS MOVED TO TAKE UP THE SHOCK

Extension of Second Avenue, Seattle, Washington

Union Street, San Francisco, California

Approaching Ross Island Bridge, Portland, Oregon

Paved drives in Seward Park, Seattle, Washington

Normandie Avenue, Los Angeles, California

For City Streets — CONCRETE

Sunset Boulevard, near Beverly Hills Hotel, California

TODAY'S traffic is demanding more of city streets than many of them were built to deliver. On the other hand, concrete highways stand up year after year with little, if any, maintenance. Consequently, more and more city streets are being paved—or re-paved—with concrete.

Flint-hard concrete resists both wear and weather. Its gritty surface speeds traffic with safety. Street and curb are a unit, when desired, with resulting symmetry and greater cleanliness. The smoothness of concrete streets affords comfort to motorists and contributes much to the "city beautiful."

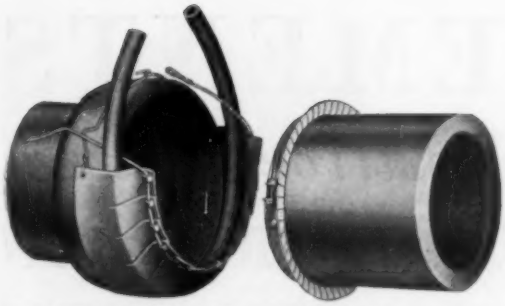
Monterey Street, Salinas, California

For paving—or re-paving—use concrete

PORTLAND CEMENT *Association*

Concrete for Permanence

CHICAGO



WESTON'S GASKET AND FORM FOR SEWER PIPE, SHOWING GASKET AND FORM ATTACHED TO BELL END OF PIPE, AND SPIGOT END READY TO BE ENTERED

A Gasket and Form for Making Tight Sewer Pipe Joints

In the usual method of making sewer pipe joints a gasket of hemp rope is used, the pipe being first inserted and the rope driven into the bell to form a packing. This method is not always satisfactory, as the thickness of the rope may vary and the rope is not always driven into the bell at the bottom as well as at the top. To overcome these difficulties, L. A. Weston, of Adams, Mass., has developed a gasket and form for making sewer pipe joints.

The gasket is made of sheet iron and is bolted onto the spigot end of the pipe with a light flange to prevent it from slipping back when entered into the bell. It also has a notched flange to take up the annular space of the joint uniformly at the bottom as well as at the top, preventing the pipe from lying in the bottom of the bell and causing an uneven joint on the inside. This gasket takes up only ¾-inch in the depth of the socket, leaving the rest for the cement.

The procedure in making a joint with this gasket and form is to first line up the pipe, then raise the bell end and set the form under it, letting the flat part of the form extend 1 inch beyond the bell. The spigot end is now entered, taking care not to disturb the form, and the form wires are then drawn tight. A spacing hose may be used to keep the opening for the cement even throughout. When the gasket and form are securely attached to the pipe, the trench may be backfilled halfway up on the pipe and the spacer hose withdrawn. A Weston's patented filling-pump is then inserted in the opening in the form at the left-hand side and cement is forced into the form until cement mortar shows on the right side. The pump should then be slowly withdrawn, at the same time continuing the forcing of cement into the form until it is completely filled with cement mortar. The upper half of the bell is then filled in the usual manner with stiff mortar applied with a trowel or rubber glove.

With this method a joint can be made if there is water in the trench, as long as it is not over the top of the form, as the cement will force the water out of the form. The form also confines the cement grout to the joint and prevents any washing during the hardening process. This method will make a tight joint which will prevent roots from growing into the pipe and will also prevent infiltration.

SPIGOT END ENTERED IN THE BELL WITH WIRES DRAWN UP TIGHT AND THE FILLING-PUMP INSERTED

General Cable Acquires Peerless

Purchase of the Peerless Insulated Wire and Cable Co. of Pennington, N. J., is announced by the General Cable Corporation, New York. The manufacture of Peerless Brand weatherproof wire will be continued at Pennington under the personal direction of its former management, who will now have at their command the research facilities and production experience of the General Cable Corporation. The Pennington plant will be operated as a part of the Standard Underground Cable Co. Division of the General Cable Corporation, and sales of Peerless Branch weatherproof wire will be in the name of the Standard Underground Cable Co. Division, with the brand name Peerless and its present construction continued.

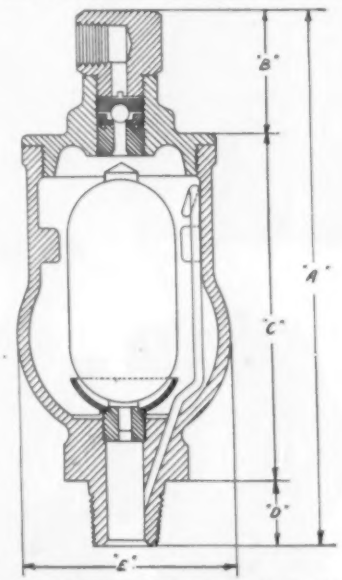
Atlas and Universal Cement Companies Combine

Universal Atlas Cement Co., a subsidiary of the United States Steel Corporation, has been formed to carry on the business of the Atlas Portland Cement Co. and the Universal Portland Cement Co. The new company assumes all the obligations of the Atlas and Universal companies. The combined productive capacity and sales territory will make the cement of the joined companies more readily available to an increased number of cement users. The plants of the Universal Atlas Cement Co. are at Hudson, N. Y.; Northampton, Pa.; Universal, Pa.; Buffington, Ind.; Duluth, Minn.; Hannibal, Mo.; Independence, Kans.; Leeds, Ala.; and Waco, Texas. The offices of the company are in Chicago, New York, Philadelphia, Boston, Albany, Pittsburgh, Cleveland, Columbus, Minneapolis, Duluth, St. Louis, Kansas City, Des Moines, Omaha, Oklahoma City, Birmingham and Waco.

Automatic Air Relief Valves

For use on piping systems, either in buildings or on cross-country lines, Apco automatic air relief valves, made by the Automatic Primer Co., 111 West Washington Street, Chicago, Ill., have been found advantageous. Unless such a valve is placed at the summit, air will collect at these points and either lower the capacity or entirely block the flow of liquid through the pipe.

Another use for these valves is on centrifugal pumps, either single or multi-stage, where the valve permits the automatic venting of the air in the pump case, which, if not removed, would prevent the pump from picking up its load. On large pumping systems in which the several pump casings are connected to a vacuum tank, the insertion of an Apco automatic air relief valve between each pump and the tank will prevent any liquid from being taken over when the air is evacuated from the pump and suction lines. They will pass air either in or out, but will close at once on liquids. By inserting a vacuum



CROSS-SECTION OF THE APCO NO. 50 AIR RELIEF VALVE

ball in the head of any of the valves, air will be passed out but not in.

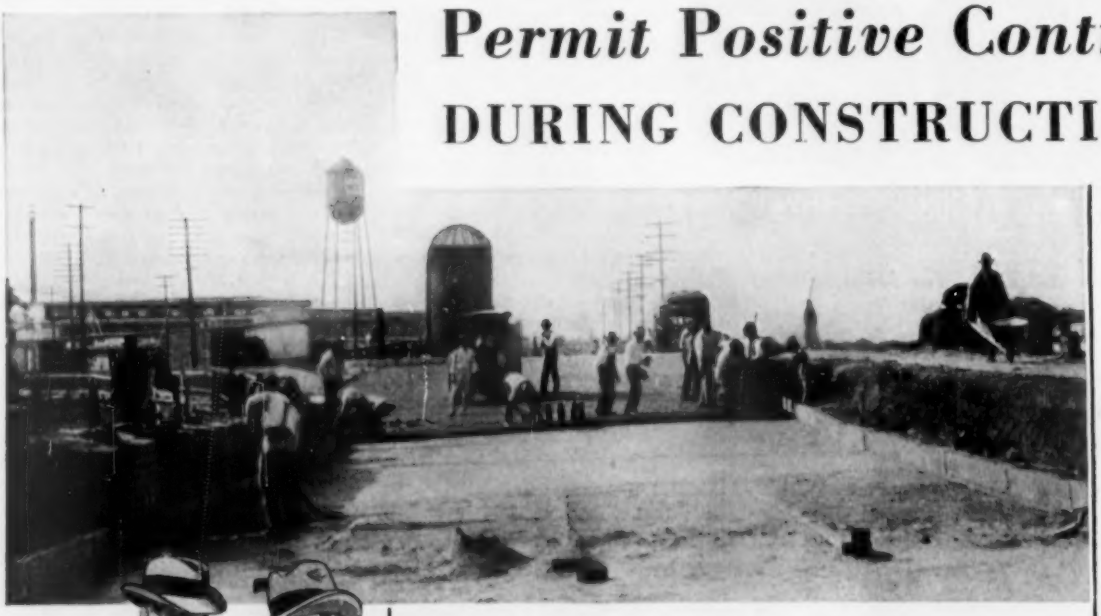
Various tanks and vessels are also used, sometimes under such conditions as to require venting in order to evacuate air or gas collecting in them. As indicated in the accompanying cross-section, the No. 50 ⅜-inch valve has a length, A, of 5¾ inches, the dimension B being 1½ inches, C 3⅝ inches, and D ¾-inch. The width E is 2¼ inches. This size has a venting capacity of 3 cubic feet of air per minute at 10 pounds pressure, and 4 cubic feet at 60 pounds pressure. These valves are also made in ¾-inch and 1-inch sizes, Nos. 60 and 70, respectively. These sizes are all good for pressures up to 125 pounds per square inch.

Lyle Changes Name of Company

On January 1, 1930, the Lyle Culvert & Road Equipment Co., Minneapolis, Minn., changed the name of the company to the Lyle Culvert and Pipe Co. This company has discontinued handling road graders, scrapers and screens, and now makes only corrugated metal culverts and pipe.

BRICK PAVEMENTS

Permit Positive Control
DURING CONSTRUCTION



"There is no guess-work as to what the quality of the finished pavement will be"

SUPERVISION during construction is simplified if you are building a brick-surfaced job.

The brick themselves can be inspected prior to use. Made in modern plants, they are uniform in size, appearance and wearing qualities. There is no guess-work as to what the quality of the finished pavement will be.

To engineers and public officials, the *known value* of brick is an asset in their work.

And more than ever before, taxpayers are realizing that the *known value* of brick pavements is the strongest guarantee of pavement quality.

For further information, address National Paving Brick Manufacturers Association, 1245 National Press Building, Washington, D. C.

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BRICK PAVEMENTS

FACE THE FUTURE • PAVE WITH BRICK

WESTERN NO. 32 INTERNATIONAL GRADER

A One-Man Patrol Grader

A new one-man patrol grader which can be formed by combining a Western No. 32 grader with either a McCormick-Deering 10-20 agricultural or a Model 20 industrial tractor, has been developed by the Austin-Western Road Machinery Co., 400 North Michigan Avenue, Chicago, Ill. The combination is easily made by removing a few pieces from the front end of the grader and adding a few attachments, enabling the two machines to operate as a single unit.

In the operation of this new unit, known as the Western No. 32 International, the tractor pulls instead of pushes the blade. The tractor is connected direct to the front end of the blading unit, and its weight holds the blade against the reaction of the soil and prevents any skidding of the front end. This construction enables the machine to do effective work in hard material and ditches where a pushed blade with the same weight on it would not be so effective.

Attaching the grader takes but a few minutes, involving the removal and addition of only a few pieces. Detaching is equally simple, freeing the tractor for other work when the grader is not in service.

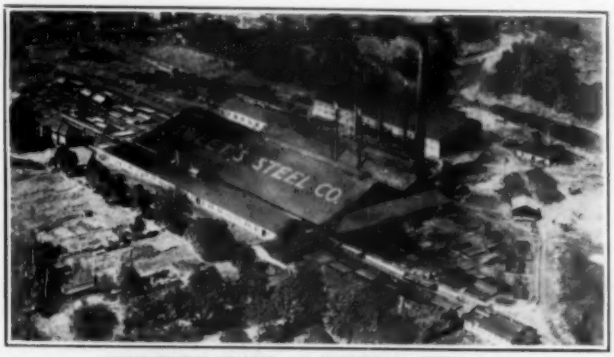
Lighting the Convention Hall at Atlantic City

The Atlantic City Auditorium, the largest in the world, seating approximately 46,000 people, is notable, not only for its size, but also because the main auditorium, exclusive of the ballroom and offices, is constructed entirely without windows or skylights. The interior illumination of this huge structure, duplicating daylight in appearance and effectiveness, is artificial.

The lofty arched roof of the main auditorium is supported on hollow trusses in which are placed 540 1,000-watt Westinghouse Chromilite projectors, spaced 14 feet apart. These are arranged within the trusses in two rows, the rows of projectors directing the light in opposite directions through prismatic windows of Holophane glass inserted in the opposite faces of the trusses. Each projector is provided with movable color screens of amber, red and blue, geared to small motors and so connected as to permit of synchronized color changes, as well as individual color combinations. The color changes are controlled by a five-scene multi preset switchboard, so that five individual lighting effects can be set up in advance.

The ballroom is lighted at night by the cove and lunette method of indirect color and general illumination. The ceiling of the ballroom is 75 feet high, 136 250-watt projectors with dual lenses being concealed in the arches and coves of this room. Each projector is provided with red, blue, green and amber screens to produce any decorative color scheme desired.

The resourcefulness of the illuminating engineer is also apparent in the exterior floodlighting which etches the massive structure's outline against the sky. There are 166 20-inch cast bronze 1,000-watt floodlights with red, amber and blue-green color screens on the pavilions and colonnade in front of the hall. Along the sides at the rear are 44 Hollowspun concrete lighting standards. Those on the two sides are equipped with single Duolux floodlighting units, and those at the rear with two Duolux units. The Duolux units in the rear are supplemented by 1,000-watt projecters.



NEWBERRY PLANT OF SWEET'S STEEL CO.

Sweet's Steel Company Expands

During the last eight months many important changes have been made by Sweet's Steel Co., Williamsport, Pa., in its Newberry plant, increasing its capacity approximately 80 per cent. This has involved the installation of new mills, new furnaces, motor drives, annealing beds and other necessary equipment.

A wide variety of products are now manufactured by this company, including plain, splice and angle bars, steel mine ties, frogs, switches and various other items incidental to industrial track haulage systems, light steel angles for bedstead, bedspring, agricultural and other purposes, steel fence, sign and route marker posts of the flanged leg channel type, concrete reinforcing bars and various other special shapes. The manufacture of steel posts by this company is a comparatively new expansion, while the making of concrete reinforcing bars is even more recent. In the company's new and improved process, bars with a much higher degree of ductility are produced by means of a special annealing system. A full range of sizes of bars are produced in compliance with the simplified practice recommendations of the Division of Simplified Practice of the Department of Commerce, Washington, D. C.

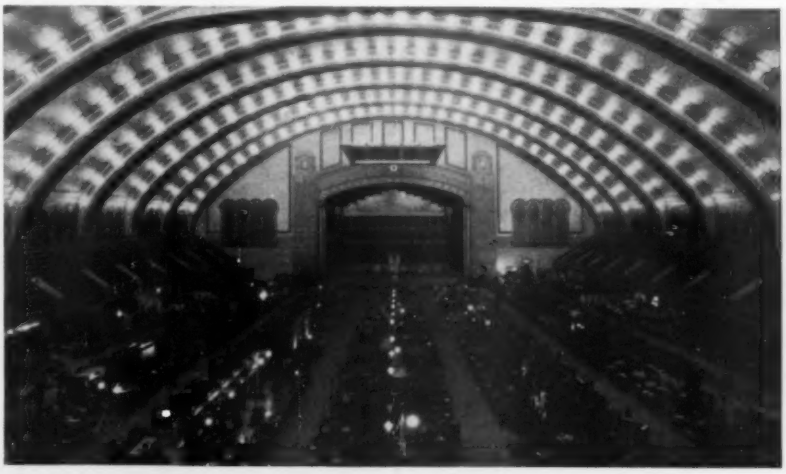
The plant of the company occupies approximately 50 acres and has, in addition, approximately 42 acres occupied by 96 company houses for its workmen.

Ludlow Valve Elects Officers

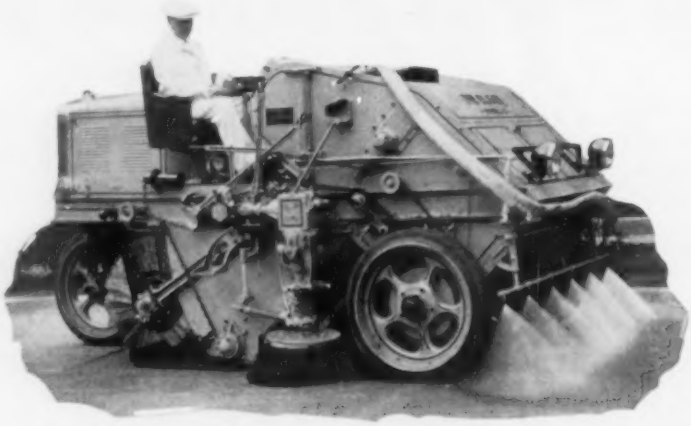
On December 20, 1929, the Ludlow Valve Manufacturing Co., Troy, N. Y., elected James H. Caldwell, formerly President of the company, Chairman of the Board of Directors. Mr. Caldwell's connection with the company covers a period of some 41 years, and for the past 23 years he has been President of the company. He will continue as its executive adviser. William H. Lolley succeeds Mr. Caldwell as President of the company.

Layne Establishes New Subsidiaries

Layne & Bowler, Inc., Memphis, Tenn., has recently established two new subsidiary companies: the Layne-Canadian Water Supply Co., Ltd., Metropolitan Building, Toronto, Canada; and the Layne-Northwest Co., 1023 Wells Street, Milwaukee, Wis.



THE ARCHED ROOF OF THE MAIN AUDITORIUM IS SUPPORTED ON HOLLOW TRUSSES, IN WHICH ARE PLACED 540 1000-WATT PROJECTORS, SPACED 14 FEET APART



The Elgin Organization Announces A New Model

Sixteen years ago, the first practical motor pick-up sweeper—The ELGIN—appeared. Since then, nearly 850 have been purchased by almost 500 cities—an unparalleled record.

Now, born of that unequalled experience, a New ELGIN has come into being. It is a new unit based upon the fundamental principles that won an international reputation for its predecessors—capable of more and better street cleaning service.

A request will quickly bring details of this machine—the greatest step forward yet taken in the sanitation field.

THE ELGIN CORPORATION

501 Fifth Avenue NEW YORK — U. S. A. — 100 North LaSalle Street CHICAGO

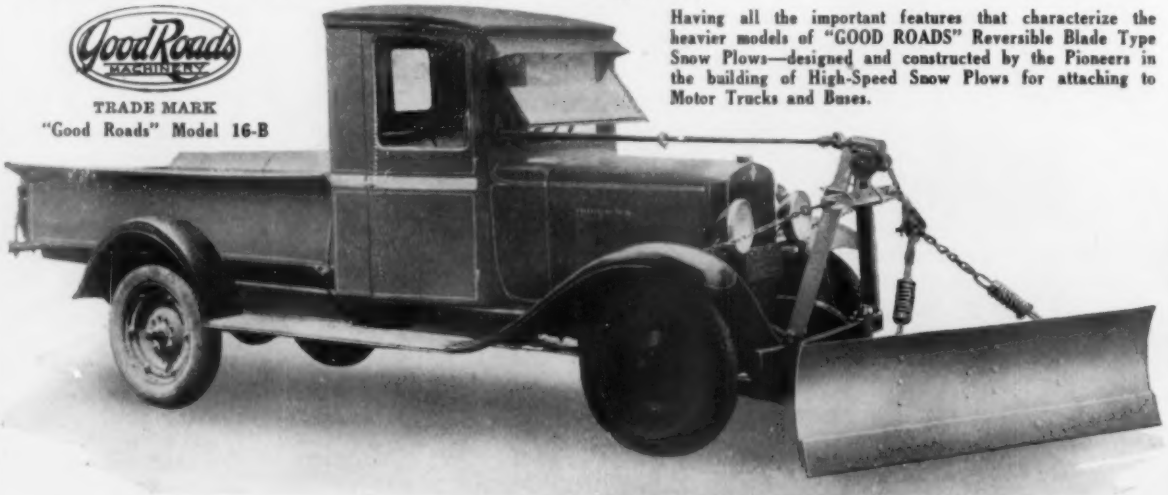
NOW! An Efficient, Dependable Reversible Blade Snow Plow for small trucks—1-or 2-ton capacity.

Good Roads MACHINERY

TRADE MARK

"Good Roads" Model 16-B

Having all the important features that characterize the heavier models of "GOOD ROADS" Reversible Blade Type Snow Plows—designed and constructed by the Pioneers in the building of High-Speed Snow Plows for attaching to Motor Trucks and Buses.



THERE IS A "GOOD ROADS" SNOW PLOW BUILT TO MEET ANY CONDITION OF HIGH-SPEED SNOW REMOVAL, AND ATTACHABLE TO ANY STANDARD MAKE OF MOTOR TRUCK OR BUS—OF ANY CAPACITY.

Manufactured and Sold by

THE GOOD ROADS MACHINERY COMPANY, INC.

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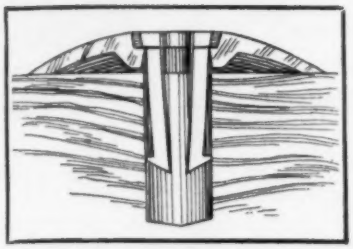
Branches at Philadelphia Harrisburg, Pa. New York Watertown, Mass. Pittsburgh Frankfort, Ky. Chicago

When you write for that catalog, kindly mention THE AMERICAN CITY.



ZONE DOME BEFORE DRIVING THE PLUG

Traffic Markers for Crosswalks and Safety Zones

A new type of traffic marker for lines marking crosswalks and safety zones has been developed by Kilborn & Bishop Co., New Haven, Conn. The Zone Dome, as it is called, is composed of three parts—the Dome itself, the fingers, and the plug. The Dome is a stainless steel drop forging 3½ inches in diameter and ½-inch thick at the center. The top is curved and has a hole through it for the fingers and plug. It is hollowed out on the bottom so that it will hug the pavement on the edge. Four fingers are used with each Dome. These are the pieces which grip the sides of the hole in the pavement and hold the Dome and plug in place. The plug is a piece of round steel, tapered at one end, and is used to push the barbs on the ends of the fingers into the sides of the hole in the pavement.

In installing Zone Domes, the line is first laid out and the spacing determined, varying according to local conditions. In wood block pavement the Dome should be inserted in the center of a block if possible. A hole 13/16-inch in diameter and not less than 1¾ inches deep should then be drilled for each Dome, using a carpenter's bit for wood block, a tile drill or a special driving tool built for the purpose by the Kilborn & Bishop Co. for asphalt, and a brick or stone drill for brick or concrete pavements. The marker is then placed over the hole, and the four fingers inserted with the barbed ends down and outward toward the sides of the hole. The small end of the plug is then inserted in the round hole left in the center of the fingers and driven down with a hammer until it is level with the top of the Dome. This drives the barbs of the fingers outward into the sides of the hole in the pavement, and the ends of the fingers spring into the notch cut in the plug. The Dome is held by the fingers, which are pressed into the pavement by the plug and the plug is held down by the fingers, so that once the plug is driven, the marker cannot be removed.

The particular advantages of this marker are its long life and continued brightness due to the stainless steel from which it is made.

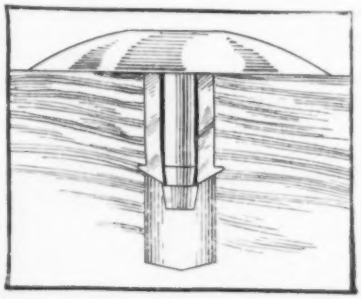
A New Heavy-Duty Power Grader

A new heavy-duty power grader has been developed and placed on the market by the Good Roads Machinery Co., Kennett Square, Pa. This new Good Roads Dreadnaught power grader is built to withstand the extreme punishment that power graders are subject to on new construction or heavy maintenance road work.

The grader is powered with a Model S-12 Red Seal Continental motor which is governed at 1,400 r.p.m., at which speed it will develop full 45 horsepower. The motor is securely installed in the main frame of the machine at the rear with three-point suspension. It is equipped with air cleaner, fan, built-in governor, starting motor with generator and distributor, gear-type oil pump, centrifugal water pump and large tubular radiator. A large-capacity gasoline tank is provided. The motor is completely housed, the housing doors being readily removable on either side to give easy access to the motor. Convenient vent doors are provided for extra ventilation.

The transmission is of the Brown-Lipe heavy-duty selective type, giving four speeds forward and one reverse. An 8¼-inch brake drum is mounted on the rear of the transmission, which is connected with the differential by a Pick universal joint.

The differential is a Brown-Lipe-Chapin unit housed in a banjo-type steel housing



PLUG DRIVEN INTO POSITION, ZONE DOME LOCKED IN PLACE

and rigidly secured to the grader side frames. The drive-axles are of alloy steel and are supported at their outer ends by Timken tapered roller bearings. These drive axles take the final drive sprockets.

The final drive is accomplished by the use of a heavy roller chain running on machine-cut sprockets. Adjustment is provided so that the drive chain on either side can be taken up independently.

The main frame is of straight construction, using heavy 10-inch ship channels. A rear motor housing of heavy steel plates is rigidly tied to the main frame channels, and ample ¾-inch rivets secure the whole frame and motor housing construction. The front end construction is of heavy steel plates, welded and riveted. The extra weight gives the machine a proper balance to prevent the front end from skidding into the gutter or bank when hard ditching or slope work is being done.

The extra-heavy drawbar is secured to the pull pin in front by a universal joint arrangement, and the large diameter circle is of heavy flanged boiler plate steel, the large bar beam sections being riveted to the circle flanges. The moldboard is of ⅝-inch thick high-carbon steel, either 10 or 12 feet long, as specified, and with renewable cutting edges. A side shift mechanism for the blade is provided.

The lift gear housings of the blade control mechanism are heavy semi-steel castings, machined to be oil-tight and dustproof, and enclose a set of spur gears ahead of the worm and main gear, thereby obtaining a double reduction.

The steering mechanism is of the positive nut and screw type with ball thrust bearings on the screw. The front wheel equipment may consist of either 35 x 7-inch steel-tired or 35 x 6-inch rubber-tired wheels, equipped with Timken tapered roller bearings. The machine will be equipped in the rear with either heavy 12-inch rubber-tired wheels or Buckeye Alligator crawlers with grousers, these crawlers being made of abrasive resisting materials and chrome nickel steel.

The operator's position is just ahead of the motor but far enough back from the blade to give an unobstructed view of the roadway ahead and of the entire blade. Every care has been exercised in locating the controls and making them easy to operate, so that the machine can be easily operated by one man.

A scarifier attachment may be furnished with the Dreadnaught when required. The tooth bar is made of heavy structural sections securely clamping ten teeth and giving a scarifying width of 55 inches.

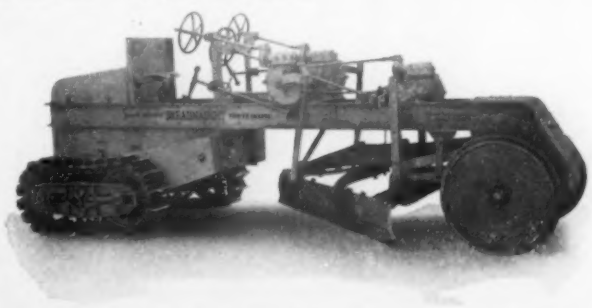
Osborn Engineering Company Reorganizes

The Osborn Engineering Co., 7016 Euclid Avenue, Cleveland, Ohio, has announced a reorganization of the company effective January, 1930.

The following officers have been appointed: President, P. P. Evans, formerly Vice-President of the company; Vice-President, E. H. Birney, formerly Vice-President of the Peerless Drawn Steel Co., of Massillon, Ohio; Treasurer, T. T. Hubbard, Director of the company since 1912; and Secretary, Kenneth H. Osborn.

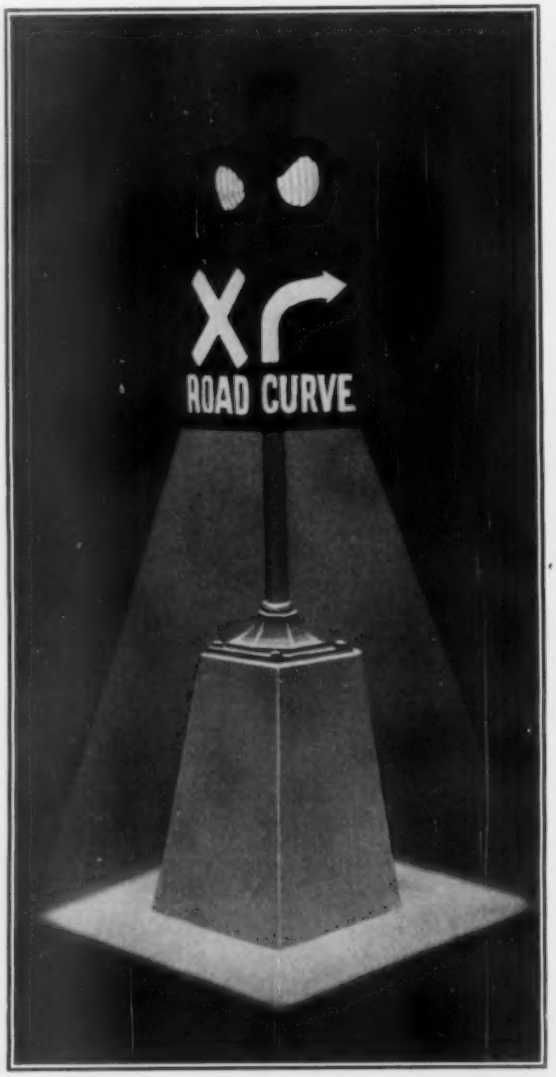
Linderman Succeeds Jack Capron

The United States Pipe & Foundry Co., Burlington, N. J., has announced that J. D. Capron, for many years publicity manager, has resigned to become General Manager of the Glamorgan Pipe & Foundry Co., Lynchburg, Va. Mr. Capron is succeeded as Publicity Manager by S. E. Linderman.



GOOD ROADS DREADNAUGHT POWER GRADER

Let 'Horni' Solve Your Traffic Problems



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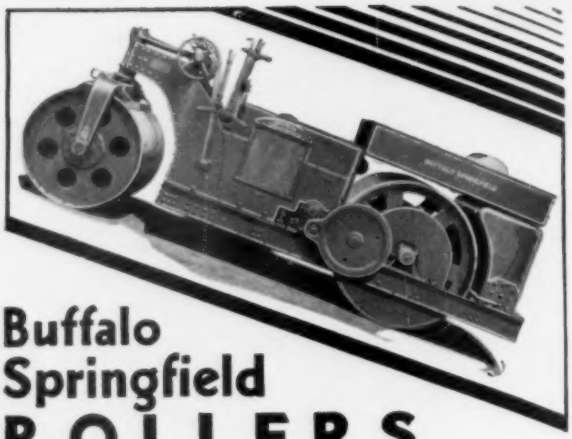
515 Greenwich St., New York, N. Y.

Manufacturers of Traffic Signals, Street Directional Signs, Fire Alarm and Police Call Systems

Descriptive literature furnished on request

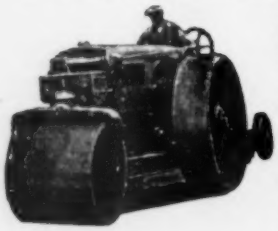


Buffalo Springfield ROLLERS

for

Service — Long Life

It is when adverse operating conditions demand an extra measure of stamina and agile power that Buffalo-Springfields show to best advantage. No matter how strenuous the road building or maintenance requirement, the Buffalo-Springfield Roller excites the admiration of the constructors and all others qualified to pass judgment.



Built in a wide range of models and sizes, both steam and motor driven, 2½ to 15 tons. Scarifier and other attachments optional.

Send for illustrated booklet

The Buffalo-Springfield Roller Co.,

Springfield, Ohio

Buffalo - Springfield ROLLERS

LOADING A RELAY MOTOR TRUCK

New Truck Model in 2-, 2½-, and 3-Ton Capacities

A new Relay truck model, in 2-, 2½- and 3-ton capacities, has recently been announced by the Relay Motors Corporation, Lima, Ohio. This model, known as Series 50, is built in two wheelbase sizes, 139½ inches and 161 inches. The 139½-inch model is particularly adapted to dump-truck operation where a short turning radius is required.

The engine on this new model is the 6-cylinder type, with a 3¾-inch bore, a 5-inch stroke and 330-cubic-inch piston displacement. Cylinders and pistons are of grey iron, the cylinder being cast in block and containing steel alloy, thus giving greater resistance against wearing of the cylinders and valve seats. The Series 50 has a rated horsepower of 33.75. Push rods are of the mushroom type, hardened and ground to close fit. Lubrication is secured by a forced feed oiling system with connecting rod bearings fed through a drilled passage in the crankshaft from the main bearings. Oil is also delivered to the timing gear compartment.

To meet the demands of all types of service, the Series 50 transmission has five speeds forward and two in reverse. The transmission, a selective sliding gear type, has gears and shafts of nickel steel heat-treated and ground. The oil level plug is in the side of the transmission.

There are two complete sets of brakes operating independently. The service brakes, of the internal expanding hydraulic type, operate in all four wheels. The hand brake is contracting on the propeller shaft.

One of the outstanding features of this new model truck is the rear axle design. This pendulum suspension design permits the axle to carry the weight of the body and the load like a pendulum at a distance from the center of the wheel, permitting the body and load to move horizontally with respect to the rear wheels. This construction is of particular importance in connection with road irregularities. Any impact to which a road wheel is subjected has a vertical and horizontal factor. As a result of the to-and-fro motion of the load and the body which the pendulum suspension permits, the greater portion of the horizontal impacts and a considerable portion of the vertical reactions, due to hitting a road obstruction or encountering a grade, are absorbed in the Relay suspension before reaching the chassis. This not only decreases the intensity of the road shocks, but also reduces their number.

Since the weight of the load and body has a tendency in this axle to keep the pinion directly below the center of the wheel, a balancing of forces occurs as the engine power is applied.

Laying a Bituminous Macadam Road with Emulsified Asphalt

The following suggestions for the use of Colas, an emulsified asphalt produced in the United States by Flintkote Roads Inc., 100 East 42nd Street, New York, have been prepared from actual experience.

It is first necessary to fill all potholes and shape the road to the required contour. Then a light layer of sand or stone dust is spread according to the proposed thickness of the surface coat. If the wearing surface course is to be 2 inches thick, the stone dust is ½-inch deep, for a 3-inch coat about ¾-inch. If the old surface or foundation has been scarified before laying the new material this course of fines will be unnecessary.

The aggregate is graded from 2 inches down to ¾-inch, about 60 per cent being 2 inches in diameter, 30 per cent 1½ inches, and 10 per cent ¾-inch. Care should be taken to preserve the proper grading of the aggregate throughout, and for this purpose shovels should be used for spreading. One cubic yard of aggregate can be spread over 12 square yards and give a finished coat of 2-inch thickness allowing for compression.

The surface should then be watered and rolled, it being essential that the aggregate be tightly consolidated before grouting is begun. Considerably less water is required than in waterbound work, and the slurry should be worked up to within ¾ to 1-inch from the top.

The next process is the semi-grouting. That is, when the surface is firm and while the stone is still wet, if possible, the Colas emulsified asphalt is applied, using ¾ to 1¼ gallons per square yard. Application can be made either by a pressure truck or by pouring from a pouring pot fitted with a special baffle. With a pressure distributor an even application is obtained by regulating the speed of the truck and making one or more trips over the surface to be treated, according to the amount of asphalt required. With the pouring pot, however, the best method is for the operator to measure the area of road surface to be grouted with one drum of Colas and to regulate the distribution acordingly. The first canful is poured on a longitudinal strip along the outside edge of the road. The remainder of the surface is then treated by pouring in longitudinal strips working from the middle of the road outward. The operator must aim at an even distribution, avoiding excess of Colas in one place and too little in another.

As soon as a sufficient area has been treated and before the emulsion has time to "break," ½-inch screenings are spread over the surface in sufficient quantities to fill up all surface interstices, but not in excess of this. The surface is then rolled to fix the chippings, and on the following day is well rolled again. Careful and systematic rolling, beginning at the haunches and finishing at the crown, is essential.

It is advisable to leave the grouted surface for some days, allowing traffic to use it meanwhile, before applying the seal coat. The application of the seal coat is effected in a manner similar to the grouting, but only ¼-gallon of Colas is required per square yard, and the operator with the pouring can must move more quickly. After the Colas is applied and before the emulsion breaks, the final covering with ⅜-inch screenings is spread evenly over the surface at the rate of 160 square yards per ton and the finished surface is well rolled.

The instructions for the semi-grouting method apply to full grouting in all details, except that the amount of water to be used in the construction of the road surface will be considerably less for a full grout of 1¾ to 2½ gallons of Colas per square yard.

The quantity of Colas used depends on the extent to which the bottom slurry is worked up. For a full grout of 2½ gallons, the surface should be dry-rolled till firm and solid, the sand or stone dust acting as a seal to the bottom of the stone course. If 1¾ gallons per square yard are applied, only sufficient water is used to bring the slurry to within 1¾ inches of the top by the time the surface is consolidated by rolling.

In using these methods, it is not necessary to close half the road to traffic.

J. V. N. Dorr Awarded Medal

John Van Nostrand Dorr, President of the Dorr Co., 247 Park Avenue, New York, has been awarded the James Douglas Medal of the American Institute of Mining and Metallurgical Engineers in recognition, according to the citation, "of his invention of apparatus and achievement in developing and improving hydrometallurgical practice."

McEverlast Announces New Advertising Manager

McEverlast, Inc., 111 West Seventh Street, Los Angeles, Calif., announces the appointment of O. A. Steller as Manager of the Advertising Department. For several years Mr. Steller has been Editor of *Concrete*, an engineering publication with an international circulation, and, previous to this connection, he served in the Advertising and Publications Bureau of the Portland Cement Association, Chicago. Mr. Steller has traveled extensively and has been employed on the engineering staffs of the Wisconsin Highway Commission, several railroads and the U. S. Geological Survey.

Showing Curcrete being applied on Division Road, Royal Oak, Michigan

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Curcrete is an asphalt emulsion—applied in the form of a fine spray to freshly finished concrete—while it is still soft and wet. The curcrete method stops evaporation of water from the concrete—immediately. It prevents checking and subsequent scaling. It insures maximum and uniform strength.

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Rooms for Two at $3.50—$4.00—$4.50

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Portable and Stationery Asphalt Plants

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These asphalt plants are made in 4 sizes, 450, 850, 1500 and 2000 sq. yds., 2-inch top soil per day. Burn coal or fuel oil, and the necessary change from one to the other can be made without trouble and delay.

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